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MILLION
TURKEYS
Vouch for the Scientific Front of Veterinary Medical Research
Despite two centuries of continuous effort to raise turkeys on millions of farms, the annual crop barely reached the two-million mark by the nineteen-twenties, or after scientific research of poultry pathologists had shown the way to increase the number by curtailing the ravages of disease.
Forty-five million turkeys for 1947 compared with two million for the annals of the teen decade not only reflects the conquest of entero-hepatitis but symbolizes the mastery of swine plagues, bovine piroplasmosis and tuberculosis, strongyloses, foot-and-mouth disease, and other perils to national solvency.
MR. RICHARD KLEBERG, OWNER OF THE MILLION-ACRE KING RANCH AND 120,000 CATTLE SOLEMNLY WARNED THE CONGRESS THAT FOOT-AND-MOUTH DISEASE ALONE WOULD DEAL A DESTRUCTIVE BLOW TO THE NATIONAL CREDIT AND LOWER THE AMERICAN STANDARDS OF LIVING — SEQUELS OF LIVESTOCK DISEASES LONG EMPHASIZED IN THE COUNCILS OF VETERINARY MEDICINE.
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Allied Laboratories, Inc., takes pride in the fact that, as demonstrated by the printed evidence reproduced below, this policy originated within this organization.

Published in the Country Gentleman, June 20, 1914, this advertisement first publicly declared the policy inaugurated in 1912, of confining sales to members of the graduate profession. It is believed to be the first publicity ever attempted to teach laymen to discriminate between graduate veterinarians and non-graduates, empirics and "quacks."

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Journal
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Veterinary Preventive Medicine in Civil Affairs and Military Government (G-5) in Northwest Europe from D-Day to V-Day

LT. COL. FRANK A. TODD, V.C., U. S. ARMY
U. S. Zone, Germany

WARS OF THE PAST have brought with them diseases of all types. Epidemics of human diseases during and following these campaigns of history have been accompanied by epizoötics of animal disease, causing enormous losses of livestock. This latter group also causes disease and death among the human population.

Experiences of 1914-1918 reveal the rapid spread of rinderpest through Russia and into Rumania, Bulgaria, Poland, and Greece. Simultaneously, an outbreak of contagious bovine pleuropneumonia appeared in Germany where it had been absent for many years. Anthrax and glanders appeared and were big factors in determining the outcome of campaigns. The losses in animals helped to bring famine and starvation to the people.

These factors led to the provision for an early instigation of a veterinary service in the Civil Affairs and Military Government organization of the Allied forces in Europe.

Under Civil Affairs and Military Government, the veterinary service deals primarily with matters of importance to public health and economics. The prevention and control of animal diseases not only reduces the transmission of certain of these diseases from animals to man but also checks great losses in essential livestock food resources. A successful veterinary program thus benefits the mission of the Army by promoting local food production from livestock sources. To carry out this program of preventive medicine, the following duties were assumed by the veterinary service:

1) To prevent the introduction of rapidly spreading diseases such as rinderpest, bovine contagious pleuropneumonia, and swine fever into Europe, if possible or, if such diseases had already entered the continent, to take vigorous steps to control their spread and bring about eradication.

2) To prevent the spread and effect the control of less disastrous but nevertheless economically serious infectious diseases such as anthrax, foot-and-mouth disease, swine erysipelas, glanders of horses, and parasitic mange of horses and sheep. This group of diseases can seriously interrupt the normal proceedings of established agriculture.

3) To establish or ensure the enforcement of such existing laws and regulations controlling the more insidious diseases relating to the production of the quantity and quality of meat and milk. This would include the safeguarding of the quality of meat and milk and the prevention of spread among human beings of diseases of animal origin.

ORGANIZATION

To carry out this proposed program of Supreme Headquarters Allied Expeditionary Force, U. S. Army, veterinary officers were detailed for duty with Civil Affairs and Military Government staffs. During the early planning stages, they were the technical consultants and provided technical advice and information on veterinary matters relating to public health, supply, and economics. For operational purposes, the success of this program of disease control would depend on three principles, namely:

a) The immediate reporting of each outbreak of disease.

Presented before the Second General Session, Eighty-third Annual Meeting, American Veterinary Medical Association, Boston, Mass., Aug. 18-22, 1946.

From the Office of Military Government (U. S. Zone), Germany.

b) The rapid instigation of methods of control and quarantine.

c) The speedy distribution of necessary supplies to combat the particular condition. Stock piles of emergency drugs, dressings, instruments, and biological products were assembled for this purpose.

G-5 veterinary officers were placed in strategic locations to carry out this responsibility in the most effective manner. They were located in the Army areas under the field commanders; in the Army Group Headquarters to coördinate this service between the several armies; in the Communication Zone and in several of the Supreme Headquarters Allied Expeditionary Force missions to liberated countries. A veterinary officer was included on the staff of consultants of G-5 Public Health Branch, Supreme Headquarters Allied Expeditionary Forces. This latter officer was charged with these duties:

1) Coördinate the entire G-5 veterinary service for Northwest Europe.

2) Advise the chief, Public Health Branch, on matter of policy related to G-5 veterinary activities.

3) Plan for, and coördinate with military operations, G-5 veterinary operations.

4) Furnish advice and assistance required for preventing the introduction or spread of diseases of animals transmissible to man within the area of responsibility.

5) Advise with reference to, and assist in, establishing and enforcing indigenous laws and regulations pertaining to diseases which diminish the quality or quantity of meat and milk.

6) Assure availability of technical advice to other agencies with reference to animal husbandry.

7) Assure the furnishing of adequate and current information to all levels and agencies concerned with veterinary matters.

8) Furnish technical advice to the chief, Medical Supply Coördination Section, relative to required veterinary supplies.

To ensure the widest possible coverage for rapid intelligence in reporting of disease outbreaks, not only G-5 veterinary officers were relied upon to keep the information on livestock health as current as possible, but all public health personnel of the Civil Affairs and/or Military Government detachments that were deployed generally throughout the liberated and occupied areas were used. Supplementing the G-5 veterinary officers were also the veterinary officers of the tactical and supply units, as well as those of the U. S. Army Air Forces. These officers played an important part in making this particular veterinary service effective. They were helpful in reporting and investigating outbreaks of animal diseases and supervising the control measures and distribution of emergency Civil Affairs veterinary supplies in the areas where they were on duty.

BACKGROUND

It was realized from the very beginning that only with the help and coöperation of the existing civilian veterinary organization of each liberated country and occupied area could this plan for disease control be achieved. Therefore, one of the initial actions taken after arrival on the European continent was to call on and meet the chief and director of the veterinary service of each country. In those countries that were not completely liberated after the first several months following the invasion, the highest government veterinarian available was approached. The veterinary service of Civil Affairs and Military Government was explained to these officials, together with the methods of accomplishing this work. The assistance that could be expected from the military was discussed as well as the coöperation necessary from the civilian organizations. In all cases, full coöperation was assured and experienced.

All veterinary service relating to Civil Affairs and Military Government in Northwest Europe was coördinated from one office, e.g., the office of the chief, Public Health Branch, G-5, Supreme Headquarters Allied Expeditionary Force. In this manner, an overall picture was maintained. Each organization was kept informed of all current information and, in case of emergency, the efforts of all available veterinary personnel and facilities could be directed in an organized and coördinated manner.

The breakdown of civilian communications following D-day made rapid reporting difficult but the use of the military facilities overcame this difficulty.

DISEASES TREATED

The notifiable diseases of most countries include rinderpest, foot-and-mouth disease, anthrax, contagious pleuropneumonia, sheep-pox, rabies, glanders, dourine, swine plague, Borna disease, brucellosis, infectious anemia, swine erysipelas, hog cholera, scabies, open tuberculosis, equine influenza, blackleg, fowl pest, fowl typhoid, foul brood (bees). Each practitioner diagnosing one of the above diseases reports its presence and location immediately to the office of the chief Veterinary Officer of the Ministry of Agriculture.

These data are compiled and published for distribution semimonthly by the ministries. In order to avoid delay between the time the outbreak was initially reported and the time that the *Sanitary Bulletin* is published, arrangements were made with the ministries to forward immediately the reports received from the field, to the office of the veterinary consultant, G-5, Supreme Headquarters Allied Expeditionary Force. The time saved with this procedure was from one to two months. This method was similar to the one used by these countries prior to the war in dealing with the International Institute of Epizoötics.

Similarly, information from the operational areas was forwarded to the Supreme Headquarters Allied Expeditionary Force office. In this manner, a detailed picture of the current health condition in the livestock of Northwest Europe was maintained. All information received was compiled in this office and made available to the proper authorities. The minis-

tries of agriculture of the liberated countries were kept informed of the health conditions in neighboring countries. This service was helpful to them in formulating plans for control measures. This information also was lodged with the International Institute of Epizoötics in Paris.

ANTHRAX

The first reported outbreak of animal diseases was that of anthrax in the Brittany area shortly after D-day. Twenty human cases were reported in addition to the cases in the live stock. When the area was finally uncovered by the U. S. Army, a veterinary officer of the supply service in the communication zone investigated the condition, supervised the sanitary procedures, and obtained the necessary biologics by air for use in the area. Only isolated cases in livestock appeared thereafter.

The same experiences were reported many times by the Army veterinarians following close behind the advancing front lines. These officers were extremely helpful to the local civilians and practitioners in aiding them with technical advice and badly needed supplies.

In those areas devastated by tactical operations, the U. S. Army veterinary service took an active part in reëstablishing the civilian veterinary service by recommending temporary government appointments, placing practitioners in locations where they would be most effective, supplying emergency items (both civil affairs veterinary supplies and captured German veterinary supplies were used in these cases) and, in a few cases, providing limited transportation facilities. Aid was given in reestablishing the veterinary laboratories in these areas in order to provide emergency biologics and diagnostic service.

HOG CHOLERA AND ERYSIPELAS

In the spring of 1945, an outbreak of hog cholera was reported in a large herd of pigs in the Normandy area of France. It began spreading from this focus. Again, the veterinary officers of the supply services located near the area investigated the condition and requested the necessary serum. The material was delivered by air from civil affairs stock piles provided for such emergencies. The control of this disease followed shortly afterwards.

Swine erysipelas appeared in numerous places throughout both liberated and occupied areas. It was kept under control by the use of serum. Stocks of serum were produced by some of the liberated countries and were distributed by the military to those areas where the outbreaks occurred.

Seasonal diseases were kept under control by providing supplies of necessary biologics and drugs in central locations to be distributed as needed.

FOOT-AND-MOUTH DISEASE

Foci of foot-and-mouth disease were widely spread through the countries of Europe. During the first year on the European continent, this disease was kept under control by a coordinated program of rapid reporting, quarantine, restriction of movement, slaughter, and the use of the limited quantities of serum and vaccine made available by the Swiss government.

Foot-and-mouth disease first appeared on the German border in the fall of 1944. In November, 1944, it was reported near the Dutch-German border in areas of Germany about to be occupied by the Allies. Livestock from these areas was to be evacuated into Holland prior to the tactical movements across the infected territory. Conservation of food made it necessary to carry out this movement of animals before the Army operations began. It was agreed that the Dutch authorities would be entirely responsible for the handling of these animals and the results thereafter. The Dutch veterinary inspector-in-charge and a G-5 veterinary officer discussed the movement and restrictions to be used. The German veterinary official in the area was directed to segregate the animals from noninfected and infected farms and to have the former group delivered to the border first. The sound animals were brought to the frontier by the German farmers at several places. Dutch veterinarians were present on the border at the places of entry to examine and classify each animal as it came over the border. The animals were classified, identified, and recorded by means of ear tags. They were placed in two groups: (1) for breeding and milking; (2) for slaughter and food. The examination on the border was principally for foot-and-mouth disease. A small number of cases of this disease were found among the cattle at this time. The diseased animals were transported immediately to the nearest slaughter house where they were killed and inspected for food.

The large number of animals involved in this movement, the scarcity of food, the limited pasture area, poor fences, and limited housing facilities made it unsatisfactory to confine them to several large quarantine areas near the border. Since this area of Holland had recently had foot-and-mouth disease, it was decided to place the animals on farms within a definite area in this part of the country where they would remain thereafter. The cattle, sheep, and pigs of this movement were inspected from time to time by Dutch veterinarians to check their current health conditions. This procedure was satisfactory inasmuch as no spread of foot-and-mouth disease was reported from this restricted area.

Foot-and-mouth disease was again reported in the northern part of the Duchy of Luxembourg about the middle of January, 1945. When the Germans broke through during the battle of the Ardennes, the cattle in the northern part of the Duchy were driven to the southern part, resulting in the introduction of this infection in that area. A herd of 150 animals that was supplying milk for the refugees that had been evacuated from their homes in the northern part of the country became exposed. Information was obtained that a supply of immune serum existed in the basement of the home of one of the native veterinarians located just 3

kilometers from the German lines. The first request by the civil affairs veterinarian to enter this town to obtain the supply of serum was refused by the local division commander because the road was under enemy observation. On the second day, however, during a fog and snow storm, the American veterinary officer was allowed to enter the city where he found 100 liters of serum. This was brought back to the City of Luxembourg and used in this herd of milking cattle, checking the infection and resulting in no loss in milk production.

After the withdrawal of the Germans, all northern Luxembourg was considered infected with foot-and mouth disease. Arrangements were made through Supreme Headquarters Allied Expeditionary Force for the veterinary officer to drive to the Swiss border, where an adequate supply of foot-and-mouth disease vaccine was obtained. The civilian veterinary service in Luxembourg had become disorganized. Some of the practitioners had been withdrawn from their homes by the Germans while some, who had opposed the Germans, had fled to Brussels for safety. The veterinary officer who was supervising this project traveled to Brussels and located five veterinarians among the Luxembourg refugees and brought them back to their areas. With the aid of these men, a "cordon sanitaire" was established 15 miles north of the City of Luxembourg, running east and west across the Duchy. By inoculating all animals in this area and allowing no animals or fodder to pass from one area to another, this outbreak was prevented from spreading.

Early in the spring of 1945, several outbreaks of foot-and-mouth disease were reported in Belgium. The Belgian government requested aid and assistance in obtaining foot-and-mouth disease vaccine and veterinary supplies needed for the administration of this product.

Supreme Headquarters Allied Expeditionary Force acquired sufficient vaccine from Switzerland. Instruments and necessary medical supplies were furnished by the U. S. Army Medical Supply Division. With the aid of these materials, the disease was effectively controlled within this country.

SUMMARY

It will be seen from the preceding remarks that the Army veterinary service played an important and effective rôle in the efforts of the Allied Armies in liberating the countries of Northwest Europe and aided in the initial steps of rehabilitating the livestock of these countries.

An effective program of veterinary preventive medicine and disease control has been achieved. Disease has been kept to a minimum; the livestock is being protected and cared for to produce urgently needed food for the peoples in this part of the world and to provide labor for rebuilding the countries.

William Sommerville, Buffalo, New York

Wm. Sommerville, V.S., Buffalo, N. Y., was a prominent veterinarian of the 1840's. In the February, 1856, issue of the *American Veterinary Journal*, his hospital is described as a fire-proof structure accommodating 40 horses in which "a steaming apparatus for the treatment of chronic cases was being installed." The article adds, "Doctor Sommerville has been practicing in Buffalo for eight or ten years and is doing a good business." The fame of the Sommerville's of Buffalo lasted through the rest of the nineteenth century.

Livestock Prod Is Painless—Humane—Effective

Clubbing animals in transit has long been disapproved by the industry for both humane and economic reasons; besides, frequently, it fails to accomplish the purpose, and the loss to the livestock farmer through the corporeal damage inflicted runs into large sums. In short, the use of heavy prods is not tolerated by the better elements of the livestock circle. The National Live Stock Loss Prevention Board conducts nation-wide educational programs on the subject. Prodding disobedient or frightened animals by means of the tickling sensation of electric shock promptly makes hesitant animals change their mind and is, therefore, an all around blessing which veterinarians will sanction and use in the pursuit of their work. There are many places in veterinary practice when a gentle reminder to stubborn animals is a benefit to all concerned. The practitioner may be left to choose the indications. The "Hot-Shot Prod" delivers its load by contact and slight forward pressure.

In 1893, the sensation of medicine was the Murphy Button, used in lieu of sutures for intestinal approximation.

A distinguished British visitor, speaking at the 1893 meeting of the American Medical Association, said: "An increased membership of the American Medical Association would automatically result in the improvement in the *Journal*. Better material and a larger wastebasket would naturally follow an extended membership."

Peacetime Benefits from Biological Warfare Research Studies

GEORGE W. MERCK, A.B.

Rahway, New Jersey

I WARMLY WELCOME the opportunity to address this meeting of the American Veterinary Medical Association for two reasons: first, to show and explain the very vital part which members of this association and others interested in your chosen field of endeavor played in the Biological Warfare Research Program; and second, to express my thanks for helping me discharge my duties as special consultant to the Secretary of War in charge of this part of the wartime activities. I must also add the gratitude of those associated with me in the participating departments of the U. S. Government—the Army, the Navy, the U. S. Public Health Service, and the U. S. Department of Agriculture—for the important contributions made to the nation's defenses and preparedness.

The first general officer with whom I became acquainted officially in wartime Washington was General Kelser, chief of the Veterinary Corps and co-chairman of the United States—Canadian Commission, the activities of which were revealed in your *American Journal of Veterinary Research* as part 2 of the April, 1946, number. When I came to Washington as director of the War Research Service, this project was already in operation, guided by General Kelser and his associates in the American commission, Dr. Harry W. Schoening, Dean Edwin B. Fred (now president of the University of Wisconsin), and Dr. Rolla Dyer of the National Institute of Health, and their corresponding numbers on the Canadian commission, Dr. C. A. Mitchell of the Animal Disease Research Institute, and Drs. Murray, Reid, and Craigie.

Then I had the good fortune to have Dr. Arvo Thompson assigned to me as technical aide and executive assistant. (Frankly, I do not know what we would have done without him.) Colonel Thompson was associated with the work throughout the war.

Dr. Fred organized the research programs and, in addition to Dr. Schoening, he called in Dr. William A. Hagan from Cornell and Dr. William H. Feldman from The Mayo Foundation to assist him.

THE BACKGROUND

Biological warfare, as it appeared before we set to work on it, was generally regarded as a "terror weapon." It is hard to realize this as we look back over Hiroshima, Nagasaki, and Bikini. But we had to admit frankly the risks of precipitating a mass phychological reaction at home as well as to calculate the possible effect on the enemy of our slightest interest in "germ warfare". Biological warfare, therefore, not only presented all the problems involving the development of a new weapon and the defenses against it, but also posed a most difficult and complex problem in public and political relations.

Of course, biological warfare was not new. It was known in World War I, but employed only on a limited scale. There is clear evidence that, in 1915, German agents inoculated horses and cattle shipped from the United States to the Allies with disease-producing bacteria. Some of you probably are familiar with the fact that at that time enemy saboteurs succeeded in infecting horses and mules with anthrax. The same organism was reported used in Rumania by German agents. It might have been employed in World War II, for it offered an open avenue of attack upon us. That it wasn't developed and used by our enemies was due not merely to their inadequacies but assuredly to a conviction on their part that our potentialities in terms of scientific prowess and productive capacity were far greater than theirs.

In the fall of 1941, opinion in the United States regarding the value of biological warfare was by no means united. But common prudence dictated to those responsible for the nation's defense that they give serious consideration to the dangers of possible attack. The views of scientists, alert to its dangers, were made known to the Secretary of War. Thereupon, Mr. Stimson promptly requested the National Academy of Sciences and the National Research Council to give him the benefit of the best scientific advice concerning this problem.

After an intensive and thorough study by a special committee of biological scientists—among them Drs. Schoening, Hagan, and Kelser, and later Prof. James Sherman of Cornell—the Academy and the Research Council advised

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Presented before the Third General Session, Eighty-third Annual Meeting, American Veterinary Medical Association, Boston, Mass., Aug. 18-22, 1946.

President, Merck & Co., Inc., Rahway, N. J.; formerly consultant on biological warfare to the Secretary of War.

the Secretary of War that biological warfare appeared distinctly feasible, and urged that appropriate steps be taken for defense of the nation against its use.

INVESTIGATION INITIATED

The advice given to the Secretary of War, coupled with reports of enemy activities in this field, prompted the President to direct the initiation of intensive, large-scale investigation in the United States of the possibilities and potentialities of biological warfare, and the establishment of active collaboration in this field with our British and Canadian allies.

While biological warfare was not actually used in military operations, the objectives were attained. Defenses against a potentially dangerous method of warfare were devised, and the likelihood of surprise from this quarter was forestalled.

The participation of veterinarians in the program, as has already been indicated, was of itself a vital contribution; moreover, the spirit and energy which these men of your profession brought to the project demonstrated the fullest measure of patriotism and service. In addition to those already mentioned by name, there were 25 others who served in various positions of responsibility and trust — some as officers of the Army and some as officers of the Navy — including Lt. Col. M. H. Hale, V.C., who succeeded Dr. Shope as director of the joint United States—Canadian rinderpest project. And I want also to mention, with a word of thanks for his very valuable help and advice, which were always freely at our command, Col. Raymond Randall. Others served not only in research projects in this country and in Canada but also on missions abroad. Allied collaboration in no sector was more close or more successful than in the biological warfare program.

While the main objective in all our endeavors was to develop methods for defending ourselves against possible enemy use of biological warfare, it was necessary to investigate offensive possibilities in order to learn what measures could be used for defense. Accordingly, the problems of offense and defense were closely interwoven in all the investigations conducted. The work of these groups, and that done in the universities, research institutes, and industrial laboratories, represented a truly combined operation in which Army, Navy, civilian personnel, and Allied groups worked together in the closest coöperation, under high pressure and under the strictest secrecy.

ACHIEVEMENTS

Their achievements were numerous. Since there is time to mention only a few, I have chosen accomplishments of interest to you as veterinarians.

1) *The Development of Methods and Facilities for the Mass Production of Pathogenic Microörganisms and their Products.*—First, the microörganisms selected for exhaustive investigation were made as virulent as possible, produced in specially developed culture mediums under optimum conditions for growth and maintenance of virulence, and tested for disease-producing power on animals or plants. In this work, it was necessary to determine how well various organisms of high disease-producing power could retain their virulence and how long they would remain alive under different conditions of storage. At the same time, it was necessary to discover and develop biological, physical, and chemical means for protection of personnel, animals, and plants against these organisms. This work involved exact determination of the numbers of microörganisms required to produce infection and a thorough study of all possible means of dissemination and routes of entrance into the susceptible individual. New methods had to be developed to prevent contamination of the laboratories and pilot plants in which this work was being done.

Among others, one problem, new to large scale production of pathogenic microörganisms, involved the prevention of contamination of air, water, and land surrounding the experimental stations. That the procedures developed were effective is proved by the fact that no accidental infection occurred outside the boundaries of the experimental areas. Here is an anecdote which illustrates the point:

The doubts of the health authorities of the municipality in which the main biological warfare experimental station was located were aroused regarding the adequacy of the sanitary measures, perhaps prompted by the fact that it was well known that many animals were used in the secured area. The local health officer determined to test the sewage of the establishment where it entered the city system. Imagine his surprise when confronted with the baffling fact that his tests showed the sewage was sterile — perhaps the only sterile sewage in the world. Had he tested the ventilating outlet flues from the laboratories and pilot plant operations, he would have found them sterile, too.

2) *The Development of Methods for the Rapid and Accurate Detection of Minute Quantities of Disease-producing Agents.*— If any system of defense against biological warfare is to function, there must be rapid and accurate detection of any pathogenic agent which might be employed. The methods of chemistry and microbiology available for work of this type in 1942 were entirely inadequate.

Much progress was made in developing procedures, which were highly sensitive and selective. These will be of value in peacetime work in laboratories, hospitals, and industries.

3) *Significant Contributions to Knowledge of the Properties and Behavior of Air-borne Disease-producing Agents.*— In this work, precise methods were developed for producing and measuring "clouds" of microörganisms, for determining the viability of the organisms in such "clouds", and for studying the factors controlling movements of air-borne pathogenic agents.

It is easy to visualize the importance of these categories of achievements when one considers the vast opportunities opened for transmission of disease by an adequate knowledge of how to achieve control and effectiveness in reaching

concentrations of beef and dairy cattle, not to mention poultry.

4) *Isolation and Study of a Pure, Crystalline, Bacterial Toxin.*—This was the toxin of *Clostridium botulinum*, type A, which is the most potent biological poison known to man. Knowledge gained in this work will open the way for the isolation and purification of other bacterial toxins, and will undoubtedly make possible the preparation of more effective substances which can be used for the immunization of men and of animals against such toxins.

5) *The Development of Vaccines for the Protection of Chickens against Two Highly Fatal Poultry Diseases Known as Newcastle Disease and Fowl Plague.*—This work was performed, under the direction of Dr. Carl Brandly, by civilian scientists, including Professors H. E. Moses and E. L. Jungherr, who worked in laboratories established in one of the buildings of the Harvard Medical School.

6) *Advances in the Treatment of Certain Infectious Diseases of Mammals, Including Man.*—Although extreme care was taken to protect personnel against infection, a few cases of disease attributable to laboratory accidents occurred. All of these were treated successfully, and the knowledge gained from the treatment of these cases will be of value to the medical profession.

7) *Extensive Studies on the Production and Control of Diseases which Might Affect Crops of Economic Importance.*—In this work, fungus, bacterial, and virus diseases of crop plants were studied intensively.

8) *Information Was Obtained Regarding the Effect of More than 1,000 Different Chemical Agents on Food, Forage, and Feed Plants.*—This is a particularly fertile field and provides much to agriculture in the form of weed killers and selective plant control agents. Applications of certain of these agents, even in infinitesimal dilution, had shown that they were capable of depriving the enemy of the benefits of his own labor by depriving his garden and field crops of their fruits. Not until he had carried through the labors of cultivation would he find that the roots had grown sear and that the plant must wither away without yield.

9) *The Development and Large-scale Testing of a Vaccine for the Protection of Cattle against Rinderpest.*—Dr. Shope will cover this subject in his paper but, in mentioning it and referring to Dr. Brandly's projects, I would like to point out that here are excellent examples of how there cannot help but be important advances in knowledge, many of them fundamental, and gains in scientific achievement, many of them capable of practical application, in biological warfare research. In fact, it is quite impossible for work to be done in this field without such results. It is inherent in the nature of the work. Perhaps no other type of warfare can bring with it such a guarantee of good: vital contributions to the fight against human ills and suffering, economic advantages in agriculture, and parallel gains in animal husbandry.

As you have seen in your journals—the April number of the *American Journal of Veterinary Research*, in which the rinderpest papers appeared, and the June issue of the JOURNAL of your association, in which the Newcastle disease [pneumoencephalitis] and fowl plague investigations were presented—the detailed results of the researches performed are in the process of publication. The papers which will appear in the scientific journals will represent every phase of biological science and serve as concrete evidence of the job that was done. As the work continues, more will appear. All scientific knowledge except that which would involve the disclosure of vital military information, I am assured by the Secretary of War, will be published promptly and fully; and I know that General Waitt, chief of the Chemical Warfare Service, under whom the program is going forward, and the Surgeon General of the Navy, who has charge of the Naval participation, are ardent subscribers to this policy.

PROBLEMS FOR THE FUTURE

The Special Committee for Biological Warfare, formerly known only by cryptic alphabetic designations, is being continued by the National Academy of Sciences. To this committee will be referred current questions relating to policy, including decisions on publication. Under such a practice, no question of military dominance can be raised. Biological warfare no longer can be regarded as a laboratory experiment. It has advanced far beyond the laboratory stage, and its possibilities have been explored sufficiently to permit its serious consideration as an effective type of warfare.

Those responsible for our defense and preparedness in this upset world are alert; they have their programs ready. But they need support—support from scientists, from you, which should be given generously and in full measure. And, it should not wait for an emergency call of patriotism.

There must be support from all the people, through Congress and its proper committees. That means money for research. If anything is sure about such an investment, it is that it will pay large dividends, dividends for the nation's health and for the country's economy.

Above all, there should be careful and serious consideration of the subject in whatever deliberations take place concerning the implementation of a lasting peace in the world. Despite the fact that only slight knowledge of the results of the biological warfare research program is available, there is sufficient evidence that the potentialities of this type of warfare cannot be ignored.

RINDERPEST

With every one of the millions of cattle on the North American continent susceptible to rinderpest, it would have been catastrophic had this rapidly spreading virus disease appeared. To avoid this possibility, the joint commission planned and pressed through the project. The first item on the commission's agenda was to select a site, and a suitable, isolated location was agreed upon. Grosse Isle, in the northern

reaches of the St. Lawrence River, was indeed isolated, particularly in winter! It has served as a quarantine station and as a location for isolated hospitals for decades.

The second item in the memorandum of the commission's action is "a highly qualified project director was obtained." In Dr. R. E. Shope, "they got their man." The commission assembled a group of proficient United States and Canadian scientists for him; the members of the commission themselves, and others whom they called on, gave freely and fully of advice and guidance. Particularly do I, on behalf of my former chiefs in the United States Government and those associated with me in directing the work, express our appreciation to our Canadian hosts (I selected that word advisedly) for assuming the arduous job of "housekeeping"; to Dr. Mitchell and his fellow Canadian commissioners for their practical assistance and sustained encouragement; and to Colonel Cameron, who saw to the difficult problems of transport, sustenance, security, and the many details that were needed to insure success. You will hear, in Dr. Shope's address, testimony to the fact that the researches of biological warware most assuredly bring peacetime benefits.

Experimental Wartime Studies on Rinderpest

RICHARD E. SHOPE, M.D.

Princeton, New Jersey

RINDERPEST, more commonly known as cattle plague, is an acute, contagious febrile disease affecting chiefly the bovine species and caused by a filterable virus. Such a highly fatal, highly contagious, and not too easily recognizable disease would have made an excellent biological warfare weapon to use against our millions of unprotected, susceptible cattle. Canada and the United States saw this threatened possibility and prepared against it by establishing at Grosse Isle a project to develop a satisfactory means of combating the disease, should it have been introduced into our countries.

SYMPTOMS

Clinically, individual cases of rinderpest are not particularly characteristic. The incubation period in our Grosse Isle cases was about three days and fever, of a continuous type, was the first observable sign of infection. With the onset of fever, the appetite diminished until complete anorexia ensued. Later, rumination ceased and the animal looked rough and tended to stand listlessly in its stall with its back slightly arched and its hind legs drawn together under the body. Typically, there was a glassy mucous discharge from the eyes and nose. A diarrhea, sometimes bloody, developed late in the disease. As cattle plague progressed, infected animals became rapidly weaker and, in our series at Grosse Isle, usually died on the sixth to the ninth day after inoculation.

LESIONS

At autopsy, there was little that was characteristic in rinderpest. The carcass was usually gaunt. There were ulcerations and erosions about the mouth and on the gums in typical field cases, but this manifestation was rarely seen in the experimental animals at Grosse Isle. The mucosa throughout the gastrointestinal tract showed variable evidence of inflammation and was usually swollen and reddened and at times petechiated in some areas. The lymph nodes were sometimes swollen and congested. In our Grosse Isle cases, a rather common finding was pulmonary congestion with patches of bronchopneumonia. The kidneys, spleen, and liver were normal, as a rule.

IMMUNIZATION

The situation as regards immunization against cattle plague when the Grosse Isle laboratory was commissioned in 1942 was not as serious as it might have been had no vaccine against the disease been known. There were, at the time, at least three vaccines reputed to be effective against the disease. The first of these was a caprinized virus vaccine in which the virus had been attenuated for cattle by prolonged serial passage in goats; the second was

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This is a résumé of a longer paper, of the same title, presented before the Third General Session, Eighty-third Annual Meeting, American Veterinary Medical Association, Boston, Mass., Aug. 18-22, 1946. The observations outlined in abstract here have been published in greater detail as a series of papers in the *American Journal of Veterinary Research*, 7, April, 1946—Part 2.

From the Department of Animal and Plant Pathology, Rockefeller Institute of Medical Research, Princeton, N. J. Dr. Shope is a representative of the group of Canadian and United States investigators who studied rinderpest at the Grosse Isle laboratory during the war. The additional members of this group were M. W. Hale, P. V. L. Walker, Fred D. Maurer, Henry J. Griffiths, James A. Baker, Dubois L. Jenkins, Thomas O. Robey, and H. K. Cooper. They were skillfully assisted by a group of technicians chosen for their special capabilities from the Canadian and United States Army and from the United States Navy.

Dr. A. E. Cameron of Canada, superintendent of the station at Grosse Isle, handled the difficult problems of maintenance, transport, and security inherent to an isolated outpost. He contributed very materially to the success of the project by his competence in carrying out his responsibilities.

a formalin-inactivated bovine tissue vaccine; and the third was a chloroform-inactivated bovine tissue vaccine. The difficulty was that, while we had a certain amount of knowledge as to the preparation of cattle plague vaccines, we had not one single cubic centimeter of prepared vaccine available for use if needed. It was decided, therefore, that the first thing was to prepare, as rapidly as possible, a supply of bovine tissue vaccine, and we made up 100,000 doses of that type, inactivated with chloroform, and checked for immunizing potency. However, in order to immunize the entire cattle population of Canada and the United States, the tissue from over 50,000 calves would have been required and the processing of that many virus calves could not possibly have been carried out with the facilities available at Grosse Isle. Therefore, it was quite urgent that we get a more economical and abundant source of rinderpest virus from which vaccine might be prepared. With this purpose in view, we explored the possibility of cultivating rinderpest virus in embryonating hen eggs.

CHICKEN EMBRYO VACCINE

Rinderpest virus was finally adapted to growth in embryonating eggs, the adaptation requiring two stages for completion. During the first stage, the virus would grow only in the chorioallantoic membrane and was present only in this portion of the egg. Later, after a series of adaptive passages by this route, it acquired the capacity to multiply when introduced *via* the yolk sac and in this, the second adaptive stage, invaded the embryo and egg fluids as well as the egg membranes. Once adapted to growth by this route, the virus grew well and reached titers in eggs which compared favorably with those found in the best tissues of infected cattle. This gave a rich supply of virus from a source more economical and controllable than cattle.

We had hoped to be able to make an effective chloroform-inactivated vaccine from the egg virus, substituting it for bovine tissue virus. However, we were not successful in doing this, and chloroform-inactivated vaccines prepared with egg-adapted rinderpest virus were not effective in protecting cattle against rinderpest.

This failure was somewhat tempered by a more cheerful observation made about this time. We observed that, with serial passage by way of the yolk sac, the virus became progressively attenuated for calves and that at about the sixty-seventh serial passage it no longer produced signs of illness and, only occasionally, a temperature elevation in calves inoculated with it. The really delightful aspect of this observation was that, though highly attenuated, the avianized virus was capable of solidly immunizing cattle to rinderpest caused by fully virulent bovine passage virus. It was evident that we had at last achieved our objective of producing a cheap rinderpest vaccine rapidly, in enormous quantities. A single egg could yield sufficient attenuated virus to immunize about 100 cattle.

Concerning the safety of this attenuated avianized virus, it was found through laboratory tests to be noncontagious in cattle and to have a relatively slow reversion to virulence on serial passage in susceptible calves. This relative safety, its effectiveness as an immunizing agent, its economy, and speed of production recommended the avianized virus as the vaccine of choice for use against rinderpest should the necessity arise.

Tests of the immunizing potency of the vaccine were conducted at Grosse Isle. Of 135 calves vaccinated, 76 per cent showed a febrile response to the vaccine and 24 per cent remained afebrile. All 135 animals proved solidly immune to rinderpest when challenged, however, indicating that a febrile response to the vaccine was not essential to the achievement of immunity.

The keeping qualities of the fluid avianized virus vaccine were not good. It was found to be rendered completely useless as an immunizing agent by exposure to room temperature for only three days. Even when refrigerated, it did not maintain its immunizing potency for as long as two weeks. When dried from the frozen state, however, a moderately stable preparation was achieved and in this form the vaccine was finally put up for possible field use. Vaccine prepared in this way consisted of finely ground, infected embryos and egg fluids usually in 20-cc. amounts, freeze-dried in 60-cc. containers. Just prior to use, the dried vaccine was reconstituted to 60 cc. with distilled water and administered subcutaneously in 0.5-cc. doses. Kept at 2 C., the dried vaccine remained potent for as long as fifteen months. Most of the lots that had been dried properly were still effective after a week's exposure to room temperature (22 C.).

The vaccine we prepared is not one that can be handled carelessly in the field. It contains a delicate live agent which, even in the dried state, must be protected from deleterious influences. Once reconstituted from the dried state by the addition of distilled water, the vaccine is especially fragile and should be administered promptly to the cattle for which it is intended. Though we should have liked a tougher and more stable vaccine for field use, we feel that this one could have been moved in a potent and effective condition to places where it was required had rinderpest threatened during the war.

DISCUSSION

The salient observations made at the Grosse Isle laboratory during the war may be briefly summarized as follows:

1) Rinderpest virus was adapted to growth in embryonating eggs, the adaptation requiring two stages for completion. This steplike avianization of rinderpest virus may have implications applicable to other viruses that are difficult to establish in embryonating eggs.

2) By an alternating-passage technique, rinderpest virus was fully adapted to rab-

bits. This technique for adapting a virus to a foreign host may have a wide application with viruses in general and conceivably may have epidemiologic and epizoötiologic implications of great interest.

3) Rinderpest virus survived for several days in chicks hatched from infected eggs. Such chicks, as well as those inoculated with avianized virus when under 24 hours old, developed specific virus neutralizing antibodies.

4) Lastly, and most important so far as our wartime project was concerned, rinderpest virus, when fully adapted to growth in embryonating eggs, was markedly attenuated for cattle and solidly immunized them against rinderpest. This observation was utilized in preparing an avianized virus vaccine which acted as wartime insurance against rinderpest and can play a postwar rôle in helping to control the disease in those parts of the world where it is enzoötic.

New Method of Tattooing Race Horses

—Acme Photo

An improved method of tattooing has been developed by Dr. J. G. Catlett (center), of Florida, and Mr. Walter Turnier (right), of New York. Mr. Spencer Drayton, chief of the National Thoroughbred Racing Protective Bureau, is shown at left.

By the Catlett-Turnier method, which is said to be an improvement over that developed by the Army Remount Service, 3/4-in. characters are used, each made up of a cluster of needles that outlines a digit or letter. The area to be tattooed is swabbed with ink, and four digits and one letter, difficult to remove or alter, are perforated in about two minutes into the flesh in one operation, reportedly without discomfort to the horse.

According to The Blood Horse, the main objections to the older method were difficulty in imprinting uniform letters and figures and possible discomfort to the horse.

Public Health Administration

WARREN F. DRAPER, M.D.
Washington, D. C.

A FEW WEEKS ago, I was discussing with a colleague the part of veterinary medicine in public health. "Veterinarians have been engaged in public health work from the beginning," he said. "Why, before 1900 and for some years after, the Boston City Health Department employed quite a staff of veterinarians." I was surprised. "What did they do?" I asked. "They took care of the horses that pulled the refuse carts and other city-owned vehicles."

Today, some 1,000 veterinarians are employed in public health work in the United States. Needless to say, they do not care for government-owned horses, nor are city health departments concerned with street cleaning. The function of the public health veterinarian is the control of animal diseases affecting man and of diseases spread through food products.

Such a contrast illustrates the evolution of veterinary medicine in the public health program,—an evolution which is still in progress and which has gained fresh impetus during the war. Those of you who served as veterinary officers in the Army are responsible for the increased recognition of veterinary medicine in public health work. While I was overseas with the Army of the United States, as chief of the Public Health Branch under General Eisenhower, I had many occasions to observe the excellent work of your profession. In fact, I take this opportunity of expressing my personal appreciation for the commendable manner in which our veterinary officers carried out innumerable, difficult tasks for the protection of the troops in the European Theater of Operations. Many other officers of the Public Health Service report that, throughout the war, health authorities were given the closest coöperation by veterinarians in the various service commands of the Army. In many instances, safe milk and safe food for troops, both in camp and in civilian communities, could not have been provided without the help of Army veterinarians.

The close relationship between veterinary medicine and public health brings us together today. You are interested in the work of my organization, especially as it relates to the state and local health programs. To present the work of the Public Health Service in detail would require several hours, but I shall try to give you a broad outline of our total program, and then to discuss more fully those phases in which you are particularly interested.

ORGANIZATION

The United States Public Health Service is the only federal agency concerned solely with the health of human beings. It is one of the units which make up the Federal Security Agency. The service is administered by a corps of commissioned officers who have ranks and rates of pay equivalent to those of the Medical Corps of the Army and Navy, but is not a branch of the Army or the Navy and never has been. The chief of the Public Health Service is the Surgeon General who is selected from the corps of regular medical officers. The Surgeon General's staff is composed of a deputy surgeon general and six assistant surgeons general.

Under the Public Health Service Act of 1944, the activities of the service are organized into four bureaus. These bureaus correspond in general with the legal functions of our organization.

1) The National Institute of Health is the bureau in charge of all scientific research in the Public Health Service. Scientific study of the diseases of man became a responsibility in 1902 when Congress authorized the establishment of the Hygienic Laboratory, cradle of research in the Public Health Service. At the same time, we were made responsible for the safety and potency of biologic products sold in interstate commerce for the prevention and treatment of disease. In 1937, the National Cancer Institute was established as part of the National Institute of Health. All research activities of the service are coördinated by the director of the National Institute of Health, Assistant Surgeon General R. E. Dyer.

Although several other divisions of the service conduct specialized research programs, the majority of our investigations originate in the National Institute of Health and, through it, an expanded program of coöperative research is carried on with other institutions. Grants-in-aid are made for research projects

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Deputy Surgeon General, U. S. Public Health Service, Washington, D. C.

to public and private organizations such as universities, hospitals, and health departments.

From 1940 to 1946, at least 90 per cent of the research conducted by the Public Health Service was directly related to the war effort. Some important results came of our work. For example, a new antityphus vaccine was developed by Dr. Harald Cox, then of the National Institute of Health, 1940; this vaccine was used to protect all members of United States armed forces. As a result, in the war, only a few scattered cases occurred in the Army, with no deaths. The institute was responsible for the safety and potency of millions of doses of smallpox, tetanus, and typhoid vaccines used to immunize the armed forces, and for the processing of blood plasma.

Dr. John Mahoney was the first to use penicillin in the treatment of syphilis and to prove the drug's effectiveness.

Dr. Paul Neal's Industrial Research Laboratory prevented deaths, illness, and lost time in war industries through advanced research on the hazards of hundreds of new substances used in the manufacture of munitions and other combat material. This unit also made important experiments in aviation medicine and tested many items of flight equipment for the United States Navy.

Dr. G. Robert Coatney headed a special unit working with the Office of Scientific Research and Development to synthesize new and better drugs for the prevention and treatment of malaria.

These few examples represent only a fraction of the war research projects carried out by the Public Health Service, but they illustrate the range of problems studied.

At present, the institute is turning its attention to preventive measures against infantile paralysis, mumps, tularemia, and the common cold. There are no immunizing agents for these diseases, but several groups are working to find effective vaccines.

Just before the war, Dr. J. Trendley Dean and his coworkers found that fluorine in drinking water tends to prevent dental decay in children. This discovery is now being tested in long-range studies. The public water supplies of several cities are being treated with fluorine. The school children are to be observed for ten years to determine whether dental decay is sufficiently reduced to warrant widespread use of this method.

2) The Bureau of Medical Services is the second large organizational unit of the Public Health Service, under the administration of Assistant Surgeon General R. C. Williams. This bureau includes the 28 hospitals operated by the Public Health Service, the medical service for federal prisons and reformatories, the National Foreign Quarantine Service, mental hygiene, and various coöperative medical programs.

Hospital care of the United States Merchant Marine is the oldest function of the Public Health Service, established by Congress in 1798. Twenty-five hospitals are operated for seamen, members of the Coast Guard and their dependents, and other beneficiaries of the service. At Carville, La., is the National Leprosarium where lepers from any part of the United States are hospitalized.

At Fort Worth, Texas, and Lexington, Ky., are two large psychiatric hospitals. Prior to the war, these were used for the treatment and rehabilitation of federal prisoners who are drug addicts. During the war, the amounts of illegal narcotic drugs were reduced to a minimum, and fewer patients were sent to these hospitals. Fort Worth was converted in 1942 to a mental hospital for patients of the United States Navy; Lexington has been partially converted for beneficiaries of the service.

Freedmen's Hospital in Washington, D. C., is operated for Negro civilians and is the teaching hospital for Howard University Medical School.

The Service maintains a network of dispensaries supplementary to our hospitals, and in important ports where we have no hospital.

Medical care in federal prisons is provided by public health service physicians. There are 26 such units, the largest of which is the prison medical center at Springfield, Mo.

Until July, 1946, mental hygiene activities of the Public Health Service were confined to operation of the hospitals for drug addicts, research on narcotic drug addiction, psychiatric care in federal prisons, and limited services to mental hospitals in the form of surveys of their facilities and programs. On July 3, 1946, President Truman signed the National Mental Health Act which creates an institute in the Public Health Service to conduct and sponsor research on mental and nervous diseases,—the most widespread ailments of our times. The act also makes it possible for the Service to assist universities in expanding their training facilities for psychiatrists, and authorizes grants-in-aid to the states for community mental health clinics. Thus we are now, for the first time, on the threshold of a national program for the improvement of mental health.

The Public Health Service supplies complete medical, dental, and hospital service to the U. S. Coast Guard. At the peak of the war, some 600 of our officers were assigned to shore stations and ships of the Coast Guard; many of those assigned to ships were in combat in the Pacific and the Atlantic.

Foreign quarantine became a responsibility of the Public Health Service in 1899. Until World War I, prevention of the introduction of epidemic diseases into the United States absorbed nearly one-third of the medical personnel of the service. Since that time, improvement of health conditions in other parts of the world and reduction of immigration have greatly reduced the burden of maritime quarantine. At present, international air transport is an increasing quarantine problem, since infected persons may leave a foreign port and land in the United States in a few hours, before symptoms of their disease have developed.

The Public Health Service is responsible for the physical and mental examination of immigrants to the United States. Although this task declined markedly under the new immigration laws, and still more during the war, our work with the immigration authorities has continued. Recently, service officers were sent

to England, France, Belgium, and Italy to examine 70,000 foreign brides of American soldiers who are being brought to this country; 30,000 have been examined so far.

Among coöperative programs with other government agencies, I may mention the medical programs of the Office of Indian Affairs, the Labor Branch of the Department of Agriculture, the Farm Security Administration, and the Office of Vocational Rehabilitation. Although these programs are financed and conducted by different agencies, Public Health Service officers have been assigned to administer the activities.

3) The Office of the Surgeon General (PHS) constitutes the administrative bureau of the Public Health Service. The divisions of commissioned officers, dentistry, engineering, and nursing are concerned primarily with the recruitment and assignment of professional personnel and the coördination of professional programs in the service. The division of public health methods conducts statistical studies and coördinates the planning of postwar programs. Also in the Office of the Surgeon General are the sections dealing with international health relations, and with fiscal matters and personnel administration.

At the present time, the Public Health Service has some 15,000 employees, about 900 of whom are commissioned officers. Two-thirds of the commissioned corps (600) are physicians; the remaining 300 include engineers, dentists, scientists. and nurses.

4) The Bureau of State Services (the fourth major unit) administers the federal-state coöperative public health program, and this function of the Service is of particular interest to you.

The Bureau of State Services encompasses four major divisions: states' relations, venereal disease control, tuberculosis control, and industrial hygiene. Two Assistant Surgeons General, Drs. L. R. Thompson and C. L. Williams, administer State Services, as chief and associate chief, respectively.

All divisions and units in the Bureau of State Services have one common basic function: to extend the help of the federal government to the people of the United States through their state and local health agencies. Federal help is given in three ways: (1) financial assistance through grants-in-aid to state and local health departments; (2) expert consultation on any health problem which concerns a state or group of states; (3) training of public health employees, and demonstration of new techniques for mass control of disease.

State and Federal Cooperation

Coöperation with the states has been a fundamental policy of the Public Health Service from the birth of the public health movement to the present time. Even when the service was given the responsibility for preventing the interstate spread of epidemics under the interstate quarantine law, our organization has proceeded on the theory that permanent improvements in the nation's health could be obtained only by the action of the states themselves. It was clear, however, long before the first World War, that neither states nor communities could raise the level of public health without the unifying assistance of the federal health agency. Not until 1935 was the Public Health Service able to give the states assurance of long-term, substantial help. Title VI of the Social Security Act made possible a permanent federal-state coöperative health program, ensuring regular grants-in-aid and expanding the facilities of the Service for technical aid and consultation. Since then, the provisions of title VI have been expanded and written into the public health law of the nation; national programs with grants-in-aid have been established by Congress for venereal disease control, tuberculosis control, mental health, and hospital construction,—all under the administration of the Public Health Service, and all planned to give the states the widest latitude in the development and administration of their own programs.

For the fiscal year 1947, the Public Health Service will allocate some $30 million in grants-in-aid to the states. (This does not include sums which may become available for mental health and hospital construction.)

About $14 million will be for general health services which include the establishment of community health departments, control of acute communicable diseases, sanitation, laboratory service, cancer control, industrial hygiene. Nearly $9 million for venereal disease control and $7 million for tuberculosis control also will be allocated in grants to states.

Grants are apportioned on the basis of population, *per capita* income of the states, and seriousness of the several public health problems. The formula is so weighted that the poorer states with the more serious health problems obtain a proportionately larger share of federal financial aid.

Requirements for participation in the cooperative health program are most liberal, and all are exacted in the interest of improving the health services provided for the American people. For example, to obtain federal assistance through its state health department, a local health department must be in charge of a fulltime, qualified medical officer. The states and the Public Health Service have discovered over their years of working together that public health work is a fulltime job which cannot be done economically or effectively by part-time unqualified people. Obviously, where federal funds are involved (and remember those grants-in-aid dollars come out of your tax dollar and mine) the Public Health Service has to require efficient budgeting and efficient auditing of accounts, for we are responsible to the President for the expenditure of these funds.

The most important item in any governmental program is the personnel. We know that employees, whether of private industry, federal, state, or local governments, are more efficient and give more to their jobs if they are assured of certain elementary protections. These include adequate compensation, tenure of em-

ployment on the basis of merit, and promotion on the basis of merit. Federal employees, either as commissioned officers or as civil service employees, have these protections. Many of our state governments operate under similar merit systems. Again in an effort to level up health services, to ensure efficient use of federal funds, and to equalize the standards of employment in the several state health departments, the Public Health Service requires that states participating in the coöperative health program adopt merit systems for their health department employees. This means, of course, that much consultative work has had to be done to establish qualifications, rates of pay, and other requirements in a merit system. The shortage of professional personnel during the war undoubtedly retarded efforts of the states to raise the standards and conditions of employment. The long battle for qualified health personnel, with adequate compensation and job security, must now be begun again.

I have been discussing some of the major phases of administration in the public health program which concern us at headquarters in the Public Health Service. Now let us see just how the federal rôle of technical aid is played in practice.

FIELD SERVICE

To show you this picture, I must take you away from Washington—"into the field." In order to reach state and local health departments directly, with minimum delay and maximum satisfaction, the Public Health Service maintains ten district offices, eight of which serve the 48 states and Alaska, and two serve our territorial and insular possessions,—Puerto Rico, the Virgin Islands, and Hawaii. Each continental district serves a group of states.

The medical director in charge of the district coördinates all activities of the service in his area, but most of his time is devoted to cooperation with state and local health departments. Each district has a district engineer and consultants on local health services, venereal disease, tuberculosis, and public health nursing. Additional staff members are assigned according to special needs. Each state health department is assisted in the preparation of budgets, auditing, and analysis of state and local programs.

The relation between personnel of public health service districts and personnel of state health departments is that of coworkers with a common objective. District directors visit state health officers at regular periods or on special request. The several consultants in a district also visit their counterparts in the state health agency, as the state directors of local health service, or venereal disease control, engineering, public health nursing, or tuberculosis control. District staffs also consult with local health departments, usually visiting them with a representative of the state health agency. Many times, however, a public health service specialist assists a local agency directly. A simple telephone call to the state health department may be all that is needed to keep the state informed and the record clear.

It is true that state and local departments are not always aware of serious health problems in their jurisdiction or of the specialized services we can give them. In such cases, it is common for public health service representatives acting as "missionaries" to stimulate requests for technical aid or demonstrations of new techniques in public health control.

An example of this type of coöperation may interest you. Last year, the Public Health Service had enough materials, equipment, and trained personnel to conduct demonstrations in the use of DDT for the extermination of pest insects. Our district office at Kansas City, Mo., was selected as the operating unit for the demonstrations. Dr. Maurice A. Roe was put in charge. Dr. Roe visited the health departments in six states (Iowa, Kansas, Minnesota, Nebraska, North and South Dakota) and explained the project. With state health personnel, he selected nine county health departments as possible sponsors of community demonstrations. These local health agencies were approached and they accepted the project.

Field Demonstrations.—Each local health department set the dates for the demonstration, selected the buildings in which the demonstrators would operate, invited the persons it wished to be present, and handled all other details in the community.

The Public Health Service team brought various types of equipment and materials. The demonstration was preceded by a thorough explanation of the properties, uses, and effectiveness of DDT, with a discussion period for questions from the audience. Usually the audience was composed of personnel of state and local health agencies, commercial exterminators, operators of pasteurization plants, dairies, restaurants, rooming houses, hotels, and representatives of other businesses interested in problems of pest control.

The demonstrations were conducted in several buildings, arrangements having been made with proprietors by the local health department. A pasteurization plant, a dairy, a rooming house, and a large kitchen (in a restaurant, hotel, or hospital) were commonly included. The selected rooms were sprayed with DDT, the demonstrators taking care to bring out the proper techniques. Everyone was given full information on the various effective DDT formulas, the best types of equipment for particular jobs, spray rates, precautions, and, finally, a list of manufacturers of DDT solutions and powders with current prices. In this practical fashion, interested people obtained the knowledge they needed in order to get rid of such insanitary pests as flies, fleas, and bedbugs.

Health departments have a specific interest in promoting in their communities modern methods of extermination, because pest control is an essential feature in such basic programs as milk and food sanitation, restaurant sanitation, and healthful housing. The value of such practical coöperative projects is evident when one considers that, following the first series of demonstrations, health departments in three states took over and carried on pest control programs, using materials and equipment sup-

plied by the Public Health Service; demonstrations were requested for all local health departments in the six states and for the agencies of the federal Indian Service in that area; state health departments requested demonstrations in milk-shed areas where there were no local health services.

The development and promotion of standard municipal ordinances for milk and restaurant sanitation have come about over a period of years through just such coöperative efforts by the Public Health Service with state and local agencies. The notably successful schools for restaurant employees and seminars for sanitarians, both of which originated during the war, are examples of the same kind of cooperation.

Because of its resources for the collection of information on a nation-wide basis and for investigation of conditions inimical to health, the service is able to provide state and local health authorities with the combined experience and knowledge essential to the control of disease. During the war, fresh attention was attracted to a number of diseases in which veterinarians have specialized knowledge and interest. The most important of these are undulant fever, rabies, trichinosis, and Salmonella infections spread through poultry and poultry products. Early in 1946, the Public Health Service initiated studies of these conditions with a view to developing a veterinary public health program as a part of our recently established Communicable Disease Control Unit in Atlanta, Ga. Dr. Steele, of the Public Health Service, will present the details of this program in your panel discussion of this topic.

CONCLUSION

The service recognizes its responsibility to provide leadership, consultation, and demonstrations looking forward toward the control of animal diseases which affect the nation's health. The tradition of our organization is to coöperate with state and local agencies and with the professions concerned. The interest manifested by state and local health departments, and by your organization, leads me to believe that the public health veterinarian will play an increasingly important rôle in the health program of this country.

New Motion Picture Depicts Work of Veterinarian

—Warner Bros. photo

Dr. Larry Hanrahan, portrayed by Ronald Reagan, and Daisy Otis (Peggy Knudsen) with "Tar Baby", one of the jumpers in the picture "Stallion Road", soon to be released by Warner Bros. The picture is built around the life of a veterinarian. (See p. 267 for description of the picture.)

The Mexican Outbreak of Foot-and-Mouth Disease. II.

The JOURNAL, *in keeping with the importance of the situation, will keep its readers informed on the developments in the foot-and-mouth disease problem across the border. The March issue contained a map showing the infected areas in Mexico and a complete summary of events up to February 20, at which time legislation was pending before Congress to enable the USDA to coöoperate with any other American country in control and eradication work, in the event outbreaks of foot-and-mouth disease occur, which would be a direct threat to our livestock industry.*

On February 21, 1947, the House of Representatives approved legislation sponsored by Hon. (Dr.) George W. Gillie, congressman of Ft. Wayne, Indiana, whose speech before the House on February 10 clearly outlined the nature and potentiality of foot-and-mouth disease and the imperative need of keeping it out of this country by aiding Mexico to effect its eradication in the manner employed by the U. S. BAI in former outbreaks. The bill was approved by the Senate, and was signed by President Truman on February 28.

A meeting of the Mexican-U. S. Agricultural Commission was immediately planned and a conference took place in Washington beginning on March 4 to plan an operational campaign to stamp out the disease in Mexico and prevent its entrance into the United States. The conference included the following officials:

Mexican Section

LICENCIADO OSCAR FLORES, *Chairman* of Section, and Under Secretary of Animal Industry, Ministry of Agriculture and Development.

DR. FERNANDO CAMARGO, Chief of the Division of Scientific Investigations, Ministry of Agriculture and Development.

DR. JOSE FIGUEROA, Department of Animal Industry, Ministry of Agriculture and Development.

SR. IGNACIO DE LA TORRE, Ministry of Agriculture and Development, *Secretary* of Section.

U. S. Section

L. A. WHEELER, *Chairman* of Section, and Director of Office of Foreign Agricultural Relations, USDA.

W. V. LAMBERT, Administrator, Agricultural Research Administration, USDA.

J. BARNARD GIBBS, Agricultural Attaché, American Embassy, Mexico City.

JOHN A. HOPKINS, Office of Foreign Agricultural Relations, USDA, *Secretary* of Section.

Participating

DR. B. T. SIMMS, Chief of the BAI, USDA, and member of the Commission's Animal Industry Subcommission.

DR. S. O. FLADNESS, Assistant Chief of the BAI; also a member of the Subcommission.

Officials of the U. S. Department of State.

On March 6, 1947, the Commission concluded its meeting and issued a statement containing the following formal resolution:

RESOLUTION

Considering:

That the eradication of foot-and-mouth disease in Mexico and the prevention of its spread into the United States will require vigorous action lasting over a considerable period of time and involving intricate administrative and supervisory problems, and the handling of extensive funds, and will often require prompt decision and action under competent direction, the Mexican—United States Agricultural Commission,

Recommends:

1) That there be established in Mexico City at the earliest possible date a joint office for the eradication of foot-and-mouth disease.

2) That this office be administered by a director and a co-director who shall be jointly responsible for the active direction of the campaign against foot-and-mouth disease, and for the expenditures of funds supplied by the two governments for that purpose. The director should be a Mexican citizen appointed by the Mexican Secretary of Agriculture and Livestock Industry. The co-director should be a United States citizen appointed by the United States Secretary of Agriculture.

3) That there be established a joint administrative board for the eradication of foot-and-mouth disease to which the director and co-director shall be responsible. This board shall be responsible for the policies and procedures to be followed by the office. The board shall consist of:

Three members appointed by the Mexican Secretary of Agriculture and Livestock Industry,

Three members appointed by the United States Secretary of Agriculture, and

The director and co-director of the office.

4) That the Mexican and United States Sections of the administrative board should each arrange for the appointment of an advisory committee consisting of such persons as may be desired.

The Commission considered the question

of the financing of the office recommended in the above resolution but deferred a final recommendation on this point pending further consultation with their respective governments. It is hoped that a definite conclusion on this point can be reached within a week's time.

The Commission also considered the problem of securing supplies in connection with the control and eradication program now in effect in Mexico and related problems that will result from the campaign. Assurances were given by the United States Section that every possible assistance would be given to the Mexican authorities in locating such equipment and supplies in the United States.

LATE DEVELOPMENTS

Another conference between Mexican and United States officials took place in Washington on March 15, at which further details of the coöperative program were discussed. Also, it was expected that Congress would hold hearings March 20 on the appropriation bill needed to implement the participation of the United States in the eradication work in Mexico.

NEW OUTBREAK REPORTED

At press time (March 21), a new outbreak of foot-and-mouth disease had been confirmed in the state of Chiapas, considerably southeast of the primary infection zone in Vera Cruz and beyond the secondary quarantine line shown on the map in the March JOURNAL (*see* p. 149).

Most fur farmers have yet to acquire respect for germs that can not be seen with the naked eye.—*Dr. A. M. McDermid, Poynette, Wis.*

Another Scene from the Picture "Stallion Road"

—*Warner Bros. photo*

Dr. Larry Hanrahan, portrayed by Ronald Reagan (right), Stephen Purcell (Zachary Scott), and Rory Teller (Alexis Smith), in the motion picture "Stallion Road", soon to be released by Warner Bros., in which the daily life of a veterinarian is the major interest. (See p. 267 for description of the picture.)

The Mexican Outbreak of Foot-and-Mouth Disease. II.

The JOURNAL, *in keeping with the importance of the situation, will keep its readers informed on the developments in the foot-and-mouth disease problem across the border. The March issue contained a map showing the infected areas in Mexico and a complete summary of events up to February 20, at which time legislation was pending before Congress to enable the USDA to coöoperate with any other American country in control and eradication work, in the event outbreaks of foot-and-mouth disease occur, which would be a direct threat to our livestock industry.*

On February 21, 1947, the House of Representatives approved legislation sponsored by Hon. (Dr.) George W. Gillie, congressman of Ft. Wayne, Indiana, whose speech before the House on February 10 clearly outlined the nature and potentiality of foot-and-mouth disease and the imperative need of keeping it out of this country by aiding Mexico to effect its eradication in the manner employed by the U. S. BAI in former outbreaks. The bill was approved by the Senate, and was signed by President Truman on February 28.

A meeting of the Mexican-U. S. Agricultural Commission was immediately planned and a conference took place in Washington beginning on March 4 to plan an operational campaign to stamp out the disease in Mexico and prevent its entrance into the United States. The conference included the following officials:

Mexican Section

LICENCIADO OSCAR FLORES, *Chairman* of Section, and Under Secretary of Animal Industry, Ministry of Agriculture and Development.

DR. FERNANDO CAMARGO, Chief of the Division of Scientific Investigations, Ministry of Agriculture and Development.

DR. JOSE FIGUEROA, Department of Animal Industry, Ministry of Agriculture and Development.

SR. IGNACIO DE LA TORRE, Ministry of Agriculture and Development, *Secretary* of Section.

U. S. Section

L. A. WHEELER, *Chairman* of Section, and Director of Office of Foreign Agricultural Relations, USDA.

W. V. LAMBERT, Administrator, Agricultural Research Administration, USDA.

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Historical Sketches and Memoirs

III. The General Practitioner

(Continued from March Journal)

L. A. MERILLAT

Chicago, Illinois

26.

Wright & Merillat

If you dislike fanfaron, skip this one. It's the tale of a partnership, mostly about the junior member of the firm. A sort of "I dunnit" told without facial hyperemia whatsoever, a runner up in one of those biggest-in-the-world contests of its day. It's the story of a "veterinary business house" that didn't desert science and invention, knowledge and skill, educational and organizational work, economics and politics, diligence and fair play, attention to detail and to duty, achievement by merit, professional loyalty and personal interest, and the will to uplift the standards of the nineteenth century that were keeping veterinary medicine in the joke column.

Let me introduce the senior partner, James M. Wright, D.V.S.* (CVC '89), six foot one, jet black hair and mustache, staccato voice, country school teacher and farmer, wealthiest veterinary student I've ever known; serious minded, forceful and convincing, trustworthy and honest to the core; student of veterinary science and practice, fair to middling teacher, above-the-average diagnostician, Illinois state veterinarian for eight years; expert with firearms, patron of hunting and fishing clubs, pleasure-loving compatible with business, practical joker; man of independent means of which few were aware, owner of a palatial home on Sheridan Road (s.e. corner of Devon Ave.), unseen power in First Ward politics, corn farmer and stockman of Wenona, Ill., teetotaler (didn't like the stuff). Such was the man I had the good fortune to labor with during practically all of my professional life—until both of us quit practice, he to retire and I to mess with war and farming and a so-called literary career. Oh! That darned automobile!

When Wright and Merillat broke off with the McKillip giant in 1901, getting students was the cardinal objective of both private and public veterinary colleges, and whoever thought veterinary practice scored as a lofty occupation to the man-in-the-street was near-sighted and most certainly uninformed on the schemes of the struggling tycoons in the field of education. It was twenty years and a world war before much could be done to prop the thing up. There were no ears for the preachings of unselfish leaders, not financially involved. W. & M., youngsters and raring to go, thought that only deeds could possibly help and, therefore, entered into a pact. Speaking in the third person, when these two youngsters left the McKillip outfit—college and practice—they started forthright to win state and national stature, partly for the fun of it and partly from pure cussedness. It would be fun to get on the inside and throw monkey wrenches into the growling gears. So, Wright took to politics and I took to the associations. He made the state veterinarian job as soon as his faction of the party (Republican) took over and I was soon elected secretary of the Illinois State Veterinary Association and vice-president of the AVMA (New Haven 1906). The voluntary devotion was working according to plan and, if I may go on boasting, without any eye on material reward. We had no college investment to prop up. I always paid my own traveling expenses. Except as president (1924-1925), I never drew a thin dime for traveling expenses, and, for my year in that office, the Executive Board cut the presidential appropriation down to $350. So, I had the experience of making that sum spread over a year of travel all over the country, including the trip to Portland, Oregon. Secretary Hoskins warned me several times that I had to make that do. Knowing the fine points of the game, I am not complaining. Wright & Merillat were engaged in a labor of love and were striking pay dirt. So, I bought a Chevrolet on the deferred payment plan and paid my own bills, leaving the magnanimous $350 for the trip to Portland. The pay off at the Portland meeting was meeting B. T. Simms, general

*The M. D. C. of the Chicago Veterinary College was conferred on the old graduates who paid $10 for the conversion from D. V. S. Dr. Wright saw no reason for buying the new degree.

chairman, now the AVMA's president and chief of the U. S. Bureau of Animal Industry, whom I then and there scored mentally as a straight-thinking, self-sacrificing veterinarian with a great future ahead. What are dollars laid alongside such compensation? But, that's a detour, so, back to the headline.

27.

Soaring for a Smash

At the end of the nineteenth century, McKillip had the horse practice of Chicago sewed up, and his school was drawing large classes that were giving the competing ones a run for their money.

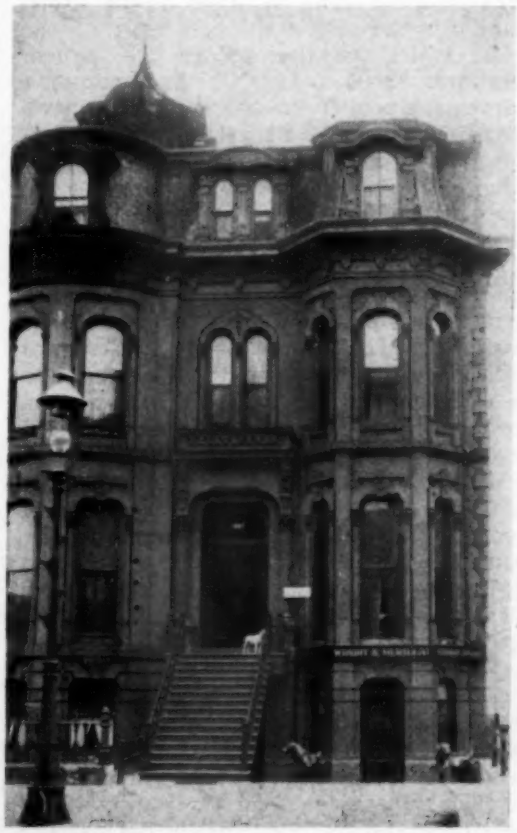
There were plans to take over the 150-foot Horse Exchange Building, next door north, which was already furnishing steam heat for the college. Confidence in the future of private veterinary education was that strong, despite the appearance of scattered horseless carriages on the streets. The Horse Exchange Building, still standing for the gaze of the curious, is now a busy station for interstate trucks, while the college next door has been torn down with only an unkempt vacant lot marking the site of the onetime proud college and hospital. That is veterinary history, physically demonstrated, and worthy enough for the records. But, the more personal result was that the college had reached the peak of its glory. From there on, its direction of travel was downward. Nearly all of the junior and senior students went with us to the Chicago Veterinary College and we, from a temporary office in a livery, took a bite of nearly $2,000 from the practice the first month and never lost ground. It was a crippling blow to the McKillip institution without hope of recovery.

When we broke off relations with the exuberant college and practice, we did not move out to "the sticks" but planked ourselves on the nearest property we could buy —the Crane residence at 1827 Wabash Avenue, which was just a block south of the McKillip locale and six blocks north of the workshop of Jos. Hughes and Pa Baker of the CVC. What I am really saying is that while the giant institution after 1901 began to fold up and decay, and vanished by 1920, the new firm (W. & M.) under another name (Dr. Wright having died) lasted until the end of 1946. The building shown here also wrote history. A luxurious hospital (cost $12,000) was erected on the rear 90 ft., and the first floor served for offices, laboratories, and sleeping quarters for assistants. The intention was to wreck the residence and extend the hospital to the street line. I am now speaking of 1902. The historical part is that within five years, the automobile had made such inroads on our type of practice that it would have been crazy to spend a dollar more on a veterinary hospital.

28.

Thumbs Down on Canine Practice

Dog practice was not developed in Chicago, nor elsewhere very much. Leon Young (CVC '97), professor of canine medicine, McKillip Veterinary College, deserted his newly established small animal creation on West Division Street and went to Los Angeles. C. A. White, occupant of that chair at the CVC, and specialist *par excellence*, who had a



Front elevation of the Wright & Merillat establishment in Chicago, 1902-1946.

small animal hospital on East 26th Street near Prairie Avenue, never seemed too happy, and finally trekked off to the Angelic city too, and there picked up a fortune. He is now living in sweet retirement in Hollywood. Thus, our dream of the biggest and finest veterinary hospital was dashed.

29.

Enter the Motor Cars

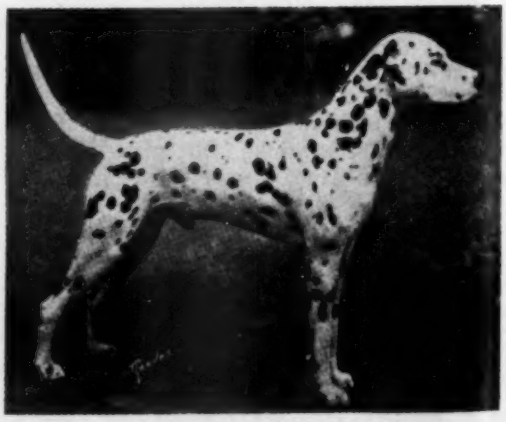
The automobiles were coming too fast and the dogs too slow. The horseless thing was a Gargantuan gargoyle barging into a happy landscape. To hammer a typewriter feelingly about that incoming parade, one must have watched it at close range. Nowadays, the new set broach this tragedy (if they think of it at all) with a cold, unfeeling neutrality, indicating that the young generation is almost completely unaware of the anguish the automobile caused to the town boys of forty years ago, to whom it was not so funny for either fortune or family. From 1905 to 1912—a short span of seven years—clinicians for the supernatant element of the social whirl saw their occupation vanish. That was about as funny as smallpox or a trip to the poor house to take the pauper's oath. The next eight years saw the motor truck lumber in and finish the job. From there on, there was nothing left to do with a hospital except make kennels out of box stalls, go to the country and wait for the tractors to barge in, or look around for an outside job. What mattered that a few town practitioners were put out of business? That would be a philosophical question were it not for the fact that the enrollment of students sank to a low level for the next twenty years and brought about the widely advertised shortage of veterinarians when the demand for them mounted. Nonmedical groups were drawn upon to fill the gaps and drug makers found a plausible (so *they* thought) excuse to launch and defend a drug store system of medicine for animals. That is the way the motor wave can be seen in retrospect. At the time, the vanishing of horses from streets seemed like bad luck. Now, after three decades, it has greater force and larger dimensions. The extraneous elements that fastened themselves upon the veterinary service to fill the gaps will be difficult to detach if and when detachment is decided upon. In some circles, they are welcomed under the name of technicians over whom the doctors can play the grandiose rôle of supervisor. The upper caste that took charge of veterinary affairs (from necessity) are not likely to be replaced in the foreseeable future. The educational system must go through the slow process of furnishing competent replacements in order to prevent the veterinary profession from remaining forever subordinate. The present research program, which was proposed by the lamented Harry Jakeman, is a step in the right direction.

(To be continued)

Soil fertility, rainfall, erosion, leaching, climatic conditions, and soil composition are all vitally concerned in profitable animal production and feeding. The swine belt, the cattle country, the milk sheds, etc., were not arrived at by accident, but have grown up partly because of nutritional facilities present in these particular sections.—*From Report of AVMA Committee on Nutrition, 1945.*

Sheep fed exclusively on pea vines not only retained their weight but mostly made gains. Lima-bean vines exclusively, on the contrary, caused loss of weight or no gains. In short, pea vines are a satisfactory forage for sheep. Respective analyses of these roughages are given.—*From J.Agric.Res., 73, (Sept. 1946): 177-187.*

The Old Coach Dog—Dalmatian



—From Dog News

Champion Nigel-of-Welfield and Stock-Dal best in show, Atlanta, Ga., 1946.

Some Observations on Veterinary Research in Korea

MAJOR RUSSELL M. MADISON, V.C., U. S. ARMY

Pusan, Korea

RELATIVELY little has been known to us in the United States about veterinary research in the Orient. In published veterinary works, seldom is reference made to work that has been carried out in veterinary research in the Far East. To those veterinarians who studied the Japanese empire in the School of Military Government, this fact has been even more noticeably apparent.

After my arrival in Korea and assignment to the United States Army Military Government, one of the duties which fell to me was that of veterinarian at the Institute for Veterinary Research in the city of Pusan in southern Korea. I have been greatly impressed by the quality of the work that has been accomplished at this institute.

I have selected outstanding works of research under the three subjects which I feel to be of the greatest interest to members of the AVMA. All of the information which I present was obtained by personal association with both Dr. Ochi, the former Japanese director of the Institute, and Dr. Nakamura, the former veterinarian in charge of the virus section.

THE THIRD VIRUS DISEASE OF SWINE

This is a new disease of swine, the virus of which was first isolated by Dr. Ochi at Pusan in 1938. The work was first published in August, 1943, in the *Japanese Journal of Veterinary Science* (vol. 5, No. 4). Prior to the isolation of the virus, there had been losses of about 50,000 young pigs each year in Korea, the loss being the greatest during the spring and fall.

In 1937, it was learned that some of these losses were due to swine influenza. During the next year, it was learned by Ochi that about 20 per cent of these losses were due to a heretofore unrecorded virus. He named it the "third virus disease of swine" because of its importance in the list of diseases affecting swine, namely: hog cholera, swine influenza, and then the third virus disease.

The third virus disease is a chronic disease of young pigs causing anemia and icterus. Pigs less than 3 months of age are susceptible, and about 50 per cent of the pigs die upon contraction of the disease. The growth of the pigs which survive is greatly retarded. Adult pigs are not susceptible.

The virus causing this disease is rather different in character from most viruses. It remains active for not more than one hour in the refrigerator, whereas it will keep its activity from six to twelve hours in an incubator. The virus will not live in glycerin, and formalin and phenol kill it quickly.

Due to the labile character of this virus, it is necessary to maintain it in an animal reservoir, as by successive passages through adult rabbits. Almost 400 such passages of the virus have been made from 1 rabbit to the next by a direct transfer of the blood at weekly intervals. The virus has not been altered by these transfers.

It is necessary to use adult rabbits for these transfers, as young rabbits which weigh less than 1 kg. will manifest symptoms very similar to those seen in young pigs. Many of the young rabbits will die. Guinea pigs, also, can be used as a reservoir for the virus, but the rabbit is the animal of choice at the Institute. Only pigs, rabbits, and guinea pigs are susceptible to the disease. Horses, cattle, sheep, goats, mice, and fowl are not susceptible.

The incubation period was usually from two to three days, followed by an elevation of temperature which ranged from 104 to 106 F. During this period of elevated temperature, which lasted for three to four days, there was a loss of appetite and occasionally diarrhea; anemia and icterus appeared. At this time, there was a high concentration of virus in the blood which was followed by a strong antibody titer when the temperature returned to normal. During the course of the disease, paratyphoid due to *Salmonella suipestifer* or *Salmonella enteritides* was often provoked and, in such cases, some affected pigs died of septicemia.

The pathologic lesions found in the third virus disease relate to the great increase of blood pigment in the spleen (hemosiderosis) and degeneration of the cells of the spleen, liver, and kidneys. There was a marked decrease of red blood cells and blood pigment. The total number of leucocytes did not change; however, there was an increase of lymphocytes and a decrease of neutrophilic leucocytes.

A serum was prepared at the Institute to prevent the development of the third virus disease. This serum was a mixture of influenza antiserum and serum from hogs hyperimmunized for the third virus. According to

Presented before the First General Session, Eighty-third Annual Meeting, American Veterinary Medical Association, Boston, Mass., Aug. 18-22, 1946.

From Headquarters, 98th Military Government Group, Kyonsang Namdo Province, Pusan, Korea.

Ochi, this serum protected pigs against the development of the disease when given to 1-day-old suckling pigs at the rate of 1 cc. per pig.

IMMUNIZATION AGAINST RINDERPEST

Korea is in constant danger of rinderpest invasion from Manchuria on its northern border, and has attempted to keep the disease out by establishing an immune zone along the north border inward to a depth of ten miles. In this zone, 42,000 to 70,000 cattle have been vaccinated annually since 1927. This zone is believed to have been a great factor in the protection of the country from the invasion of rinderpest.

Since 1924, the biological product used in vaccinating the cattle in this zone was a vaccine prepared from the spleen, lymph nodes, thymus, and tonsils of affected calves. After 1942, many animals in this zone were successfully vaccinated by a serum and rabbit virus method which was developed in the Institute at Pusan.

Nakamura (1938) attenuated the rinderpest virus by repeated passage through rabbits. After 100 successive passages, the pathogenicity for cattle was greatly reduced and the virus became "fixed" so that it did not regain its original nature, even after ten successive transfers through cattle.

In the earlier generations of the virus passage through rabbits, there were no symptoms or lesions except an occasional slight elevation of temperature. After several passages, however, a characteristic reaction developed. There was a temperature curve which reached its height on about the second day after the inoculation of the virus. Small, necrotic areas developed at Peyer's patches in the intestines; these areas, which varied in size from a small to a very large bean, had a miniature polka dot appearance which was characteristic of the infection.

The rabbit virus was prepared from the mesenteric lymph nodes of the rabbit. The node, which weighed from 1 to 1.5 Gm., was collected on the third day after the rabbit had been injected with the fixed virus. This was macerated in a mortar with saline. The node from 1 rabbit made 100 to 150 cc. of the virus. No preservative was used, and the virus was put under refrigeration immediately.

The great disadvantage is that such virus keeps its virulence for only two or three days after preparation. This makes it necessary, as is practiced in Korea, to take the rabbits to the vicinity where the vaccinations are to be done. Contrary to our fear of the possible spread of a virus in such a method, Nakamura states that there is definitely no danger of spreading rinderpest by the use of the rabbit virus.

In five different experiments, Nakamura (1942) was unable to transmit infection, by contact from calves sick and dying of the rabbit virus, to calves that were highly susceptible to a subsequent injection of the cattle virus. Infected cows can safely give their milk to nursing calves without danger of transmitting the infection.

Korean cattle are more highly susceptible to rinderpest than those of Manchuria where the disease is enzoötic. It is necessary to use antiserum with the attenuated rabbit virus when vaccinating the Korean cattle. In the vaccination, for each 100 lb. of body weight, the animal receives subcutaneously 2 cc. of the virus emulsion on one side of the back, and 4.5 to 6 cc. of the serum on the opposite side. The immunity established by this simultaneous method of vaccination, using the serum and the rabbit virus, will endure for one year or longer, whereas, use of the vaccine alone will confer an immunity lasting for only about six months. The simultaneous method of immunizing the cattle is highly favored by the foremost veterinarians in Korea.

INTRAVENOUS VACCINATION AGAINST FOWL PEST

Fowl pest is the most common disease of poultry in Korea today. It is known here in Korea as a "legal disease," which is comparable to a reportable disease in the United States. This disease is known to us as Newcastle disease, which differs from fowl plague in that it is less acute. As in rinderpest, the Institute at Pusan has had unlimited opportunities to study this disease and to carry on a constant search to improve their methods of immunization in order to combat the disease.

Nakamura and his coworkers (1937), while working with chicken tissue vaccine, found that when the vaccine was administered to fowl intravenously the degree of immunity established was much better than when the same vaccine was given either subcutaneously or intramuscularly.

When the vaccine was administered to susceptible birds, the degree of immunity established, when the vaccine was given intravenously, was 81 per cent as determined by a subsequent injection of a virulent virus. When the vaccine was given intramuscularly, the immunity was only 21 per cent, and when given subcutaneously, it was but 17 per cent.

Nakamura (1942) reported a fowl-pest vaccine prepared from egg embryo. This vaccine was superior to the chicken tissue vaccine in that there was much greater uniformity in the finished product. In testing 62 separately prepared batches of the vaccine, using 136 birds, all vaccinated intravenously, 94 per cent obtained a solid immunity to a subsequent dose of a highly virulent fowl pest virus.

The intravenous method of vaccinating against fowl pest is universally practiced in Korea. The procedure is to administer two 1-cc. doses of the vaccine in the wing vein, four days apart. The immunity established by this method will hold for two to five months.

CONCLUSIONS

The Institute for Veterinary Research at Pusan, Korea, has done outstanding work, especially on two important diseases, rinderpest and fowl pest. It has done many years of research work on these two diseases, one of which we do not have in the United States.

We do, however, realize the seriousness of a possible outbreak. This institute has developed during these years a means of control of these two diseases by the use of biological products, which may prove valuable to us in the United States.

Confessions of a Book Reviewer

During the rollicking upsurge of medicine in the 1890's, publishers of medical books were loath to furnish copies of their new tomes to medical journals unless guaranteed favorable treatment by the reviewers.[1] The in-growing dictum was no eulogy, no review copy—whereupon the *Journal of the American Medical Association*, in its play for higher literary standards, came back with the trite announcement that it would henceforth "publish criticisms and not eulogies of new books," take-it-or-leave-it, as it were. American medicine rose to its present glory on that kind of escalading, and no compromise for any holdback agency.

By comparison, veterinary medicine skipped that echelon entirely. Up to 1939, issue after issue and even whole volumes of leading veterinary periodicals will not yield a book review, let alone a book-review section portraying the profession's literary status. Neglecting to review books in, or related to, the veterinary field, up to the time the AVMA departmentalized its journal, was a perfect exhibition of its adolescence. From 1877 to 1939 is a long span, yet the AVMA library would be searched in vain for review copies of books received during that period.

The JOURNAL was privately owned from 1881 to 1915. When purchased by the Association in 1915, the inventory turned over contained no books, although the issues contain some reviews, here and there. Since 1915, more scattered reviews were published but they have no antecedents on the shelves. Obviously, they were sent out for review and not returned, as it is customary to let an outside reviewer keep the copy as pay for his work. The object is not criticism but is merely to point to a condition which, through a long stretch of years, prevented book publishers from keeping the JOURNAL on the list to receive newly published books—books sorely needed to keep abreast of the times. That condition is now being ameliorated, as the section on "Books and Reports" indicates.

As for the regular publishers, unlike the AMA of the 1890's, we have never found them lagging behind medicine itself in ethical standards. Certainly none, to our knowledge, has ever asked for editorial favors, nor do we recall a complaint from them about faults pointed out in reviews. Hark though! The authors are different in that respect. If you want to erupt a mental volcano, or lose a lifelong friend, just touch upon the literary or technical faults of a book on veterinary medicine. Oh, boy! Unaccustomed to the ways of the conscientious book reviewer and his duty to the generality of readers, the author is liable to, and generally does, blow off his top, let go with both barrels, and go into hiding to pout, meaning in a word that when veterinary medicine gets its growth, the authors will have to learn "how to take it on the chin." The reviewers will get tougher.

It's much the same with manuscripts. The difference is that a manuscript can be corrected while a book is either a joy or a blotch forever. And, here's a hunch for the records: Don't court any illusions about making a hit by reviewing books. Whether you eulogize or elegize, the end result is the same—a few thanks (perhaps) and a lot of slams.

Chastek paralysis of foxes, isolated as a special entity by Green (R. G.) and traced to deficiency of thiamin, has furnished a clearer insight into the physiology of vitamins and antivitamin factors. In other words, an understanding of this neuropathic avitaminosis lays bare some of the intriguing ways of vitamins which baffle explanation.

The practicing veterinarian must sell public health to his community.—*Dr. J. H. Steele, U. S. Public Health Service.*

[1] Fishbein, Morris: History of the American Medical Association. 15th Chapter. J.Am.M.A., *131*, (Feb. 15, 1947): 464-475.

SURGERY & OBSTETRICS

AND PROBLEMS OF BREEDING

Teat Surgery

F. A. HALL, D.V.M.
Garrett, Indiana

THE VALUE of a dairy cow depends on her udder and teats. Surgical operation on the teat of the cow is an important undertaking and great care is needed to insure cleanliness, a sterile field, and a minimum of trauma. The use of anesthesia is optional. In some cases, as with nervous, high strung cows, it is necessary; in other individuals, a lot of surgery can be done easily with only a bull lead for restraint. The range of anesthesia is local infiltration, epidural, or general.

Restraint also varies with the individual case, but for the best surgery the cow should be thrown and her four legs tied securely.

Hard Milkers and Strictures

After restraining the cow with hopples and a bull lead, clean and disinfect the teat. Using a small, sharp edged, blunt-pointed knife, cut the sphincter muscle anteriorly and posteriorly, enough to allow the milk to flow freely by its own pressure. Cut only the muscle inside the teat canal and prevent making an external wound if possible. As long as the milk will drip, the teat is left alone. The after care consists of milking three times a day or oftener and applying 10 per cent sulfathiazole ointment after each milking. I discourage the use of teat dilators among my clients. When they are used by the average dairyman, they are not sanitary. They cause much injury to the teat canal and, when used too freely, they are harmful to the cow.

An ointment or cream containing 10 per cent sulfathiazole, or 5 per cent sulfathiazole and 5 per cent sulfanilamide in a hygroscopic base, is the best healing preparation for wounds and infections of the teats, or for use after operations on the teats. It is much better than the ointments that have been used around the dairy barns in the past.

Stricture at the end of the teat, due to injury or acute infection, with a wound or scab at the tip of the teat is a problem. Such a case is always of great concern to the owner. The quarter milks so hard that he gives up and calls the veterinarian to open the teat. The stricture is caused by swelling of the sphincter muscle.

I hesitate to put a knife through infected areas that are sore and swollen. In my experience, many infected quarters follow such a procedure. If the quarter is apparently normal, and the trouble is limited to the teat, I advise the owner to skip a few milkings and to apply 10 per cent sulfathiazole ointment three times a day until the acute inflammation has subsided. The owner is instructed to try the teat every few milkings and, as the soreness subsides and the swelling recedes from the sphincter muscle, the milk will begin to pass near normal again. If one is fortunate and gets a quick healing of a small wound, five or six milkings will be the extent of the rest. Sometimes it takes longer, and if too long a time ensues the quarter dries up, and at best one can hope for a return of milk flow at the next lactation period. I feel that this procedure is safer and easier than surgical interference for the owner to handle, and the chances are greater that the quarter will be normal at the next lactation. If there should be a healed stricture at the end of the teat at the next freshening, then with the end of the teat clean, the spincter can be cut to open the teat again.

Wounds Involving the Milk Duct

These wounds are caused by barbed wire, glass, etc., usually at pasture. During the past few years the use, by dairymen, of electric fences consisting of single strands of barbed wire, has increased these accidents. If the wound is fresh, clean, and untreated, it is possible to do a good job of suturing with fairly uniform and satisfactory results. The job should be done as soon as possible. The aim should be to get healing by first intention.

I prefer to throw the cow, so that the injury is uppermost. Tie all four legs, and fasten the tail to avoid switching. Wrap clean towels or washed sacks around the hind legs and place one under the udder. Good light is necessary. An electric drop light provides light where needed. If the wound is hours old, does not look fresh, or is dirty, I prefer using a sharp, thin-bladed knife (like a Bard Parker) to remove a thin slice from the edges of the wound to try to clean the cut surfaces.

Presented before the Section on Surgery and Obstetrics, Eighty-third Annual Meeting, American Veterinary Medical Association, Boston, Mass., Aug. 18-22, 1946.

This makes a fresh bloody surface that will heal more readily.

Apply tincture of metaphen or any good disinfectant to the area around the wound where the stitches will be applied, but not on the wound itself. Insert a sterile teat tube or a grooved director into the teat canal to guide the needle. It will help to mark the teat canal. Apply a tourniquet above the wound to control hemorrhage. For suturing, I prefer a No. 7 curved needle with a cutting edge, using mostly fine silk-worm gut. It is smooth, nonabsorbent, easily applied and removed, and causes a minimum of stitch suppuration. Use an interrupted stitch going straight into and out of the teat canal. For the average wound, one deep stitch and one superficial stitch on each side is sufficient.

A suturing method that I sometimes use is going through the skin and about half of the teat tissue, then crossing over to the opposite surface, down through the lining of the teat canal, then back and up through the inner half of the teat wall, crossing over and up through the outer half of the teat and skin. This makes a figure 8 suture which closes the wound nicely and brings each of the structures into direct apposition. This is a stronger stitch and, in case the gland is in heavy lactation, will hold the structures in apposition under the pressure of milk distention and while milking. Such figure 8 sutures may be removed more easily when smooth, fine silk-worm gut is used. Apply a mild disinfectant to the wound, cover with collodion, and bandage lightly. Dress the wound and change the bandage every other day; remove stitches on the fourth to the sixth day. Milk carefully once daily or as often as the teat becomes distended. It might be well to cut the sphincter enough to make milking easier for a fresh cow and heavy milker. I advise against use of teat tubes.

The success of this operation depends on having a fresh wound needing no disinfectant and on using a small, sharp needle. The suture material should be nonabsorbent, and the wound must be kept dry and clean. I have described this operation in detail because a similar procedure is followed in most teat operations.

Acquired Fistula

There are many ways of handling acquired fistulas. If they are small, it is sometimes possible to cauterize with chemicals or a hot wire and close them by inflammation. But, I do not like to depend on these methods as it is easy for me to make the opening larger but difficult to make it smaller by cauterization. When the cow freshens, after an unsuccessful attempt to close the fistula, it is too late to correct the condition. The operation should be done while the cow is dry. I have more satisfactory results by casting the cow and preparing the area as for the operation previously described. Insert a sterile teat tube or grooved director as a guide and, with a thin-bladed knife (Bard Parker), cut an elliptical opening large enough to include the fistula in the center. Thus, one makes a wound such as previously described, which can be satisfactorily sutured. Because the quarter is dry, I use the plain uninterrupted stitch in this operation.

Growths Involving the Teat Canal

It is sometimes possible to remove these growths through the end of the teat by using the alligator forceps, scissors, and other intruments designed for that purpose, but as such operations are like working in the dark they often cause much injury to the sphincter. In most cases, I believe it is more practical to open the side of the teat to remove the growth and then suture as I have previously described. There are instances where this operation is not successful, but in the long run I can get the most satisfactory results with this method.

Obstructions by Membranes—Spiders

This refers to cases, usually seen at freshening time, where the teat is empty, and milk can be felt in the milk cistern above. I have found no really successful method of handling all such cases. However, I do get some benefit from the pressure method of rupturing these membranes. The cow must be cast and the four legs tied securely. No preparation is necessary, but it is important to have good help, at least one man to help with the clamps or rollers, and one to hold the bull lead. A clamp or set of rollers are used to capture a small amount to milk in the milk cistern and against the persistent membrane. Then with force, using the thumbs or the heel of the hand, the membrane is ruptured. In no case should the rollers be used to roll the teat. Use them only as a clamp. In about 50 per cent of the cases, the results are entirely satisfactory. However, among the other 50 per cent, it is impossible to rupture the membrane or, if one does succeed in opening it, the rupture is evidently not wide enough to insure against healing together again. Sometimes, the membrane is too thick to permit rupturing. As a last resort, I use a knife. However, when the pressure method is successful it makes a nice job. There are no after effects, no infection, no hemorrhage, and little chance of recurrence.

Amputation of the Udder

This is an operation practicing veterinarians should do more often. The operation is indicated in cases of gangrenous mastitis, actinomycosis, and chronic mastitis where there is a large amount of nonfunctioning fibrosis. Some of these animals are unsalable, and they are a menace in a dairy barn. By removing half of the udder or, in some cases, all of it the valuable cow can be kept for breeding. Or, in the case of a common cow, she can be fattened for market. If the operation is successful, these animals fatten more satisfactorily after the offending gland is removed.

As there is considerable shock attending this operation, it should not be undertaken in cases of acute or gangrenous mastitis. By being careful to select good subjects, it is possible to help some cows to live a more profitable life.

Epidural anesthesia can be used, but I like chloral anesthesia better.

The cow is rolled on her back, the legs fastened similar to the position of a colt for a cryptorchid operation. Remember that the udder is divided into two equal halves along the median line. Shave and clean the udder, apply antiseptics, and start the incision on the median line. Work down to the abdominal wall; then with a blunt instrument or the hand, work laterally around the superior border of the gland until the inguinal vessels are reached. These are the large external pudic artery and vein, the main supply of this half of the udder. Securely ligate them in two places, using stout linen or tape, then sever between the ties so that there will be little escape of blood. If properly tied, most of the hemorrhage will be controlled. It is well to make a second tie above the first one to insure against future hemorrhage. Then continue blunt dissection laterally and down to within a few inches from the teats; the gland then drops out. I usually ligate as many of the milk veins on the belly as necessary to control the back flow of blood. If it is necessary to remove the entire udder, the other half may be removed in the same manner.

Use sulfanilamide and oil to pack in the cavity, and suture the skin as tightly as possible. However, the area usually heals as an open wound. After the operation, it is well to watch for signs of shock and treat with stimulants, calcium and dextrose, or dextrose as necessary.

DISCUSSION*

CHAIRMAN A. G. DANKS (Ithaca, N. Y.).—Dr. Roberts asks if you use that 10 per cent sulfathiazole inside the teat, or as an external application?

DR. HALL.—As an external application only.

CHAIRMAN DANKS.—Dr. McCloskey asks: Is a preoperative injection of sulfonamides in the canal indicated when removing a spider, a tumor, or anything like that?

DR. HALL.—I do not use that as a procedure, no. I like to do all these operations as clean and sterile as possible, and not use any internal medication.

DR. EDWARD VAIL (Hagerstown, Md.).—I would like to ask the doctor what type of knife he proposes to use in inserting into the teat to cut the sphincter muscle. He said he used a small, blunt knife. What is the name of it?

DR. S. E. FERGUSON (Lake Geneva, Wis.).—In answer to this last question, Mr. Lichty, formerly of Woodstock, Ill., perfected a knife much as the doctor described. It is a thin-bladed, straight knife, not a very wide blade; with the handle and all it is about 5 in. long. I would say the blade is 2 or 2 1/2 in. long. He also had a sharp knife made at the same time, but more on the order of a nicking knife.

CHAIRMAN DANKS.—Dr. Sutton, of New York, asks: In closing wounds and suturing injuries of the teats, is there any objection to using a metal suture? He is thinking of the Mitchel suture clips rather than the suture metal Dr. Hall mentioned.

DR. HALL.—I think that metal sutures would be fine.

CHAIRMAN DANKS.—Dr. Denton, of Maine, asks: Has Dr. Hall ever used the lunar caustic applicator sticks to remove the scar tissue from the end of the teat, rather than the surgical remover.

DR. HALL.—No, I have not tried that.

CHAIRMAN DANKS.—Have you tried it, Dr. Denton?

DR. DENTON.—No.

DR. FERGUSON.—There is a very simple operation in which a caustic obliterates a fistula. You use a toothpick with a long-fiber cotton to make your little applicator on the tip end, dip it into chloride of antimony, press out the excess on the side so as not to make it sloppy, and drive it right down into the fistula.

It is well to use a silver probe to get the direction of the fistula. Some go straight in, some go up, down, or in an oblique direction. After determining the direction of the fistula, apply this applicator about twice, always pressing out the excess. Run it until it approximates almost the end of the fistula, and there will be absorption enough. It is a complete success for small fistulas. Larger ones have to be done by the operation that the doctor described.

*After the presentation of the paper before the Section on Surgery and Obstetrics, a brief discussion followed.

The Economics of Artificial Insemination

During the period 1940-1944, a Holstein-Friesian bull that had been serving 25 cows inseminated 4,433 cows of the New York Artificial Breeders Coöperative, Inc. For the whole U. S. A. in 1944, there were 178 artificial breeding societies representing 342,496 cows and 650 bulls, or 527 cows for each bull. The herds averaged 8 to 9 cows. The survey showed also that about the same percentage of cows conceived from the first insemination as from natural breeding (60.7%). The study was made by Fred F. McKenzie, Oregon State College, and his report is published in *Western Dairy Journal* for February, 1947.

A "First" on Listerian Surgery.—A combing through American veterinary literature seems to show that the first article on Listerian methods was a paper before the Nebraska Veterinary Medical Association by Dr. Roland Lord. It was published in the *American Veterinary Review*, June, 1891.

The diagnosis of pregnancy in farm animals as a routine practice is not as common in this country as in Europe.

Geriatrics in Canine Practice

GERRY B. SCHNELLE, V.M.D.

Boston, Massachusetts

IN NO INSTANCE does the attained skill and perfected artistry of the veterinarian prove itself better than in his handling of the aged animal. Patience, innate kindliness, deftness, knowledge of animal psychology, sympathy with the animal and its master, and an understanding heart are all needed to a greater degree than in any other phase of veterinary medicine, bar none. If a prospective client with an aged pet distrusts your handling of the animal, do not dismiss such questioning as "fussy", "neurotic", or "difficult". Instead, examine yourself for the qualities necessary to successful canine geriatrics.

The canine geriatrist is in a position to be of service to human medicine in judging the merits of specific therapy in aged individuals. Psychosomatic medicine will not work on animals. The beneficial results of homeopathy or chiropractic are dependent upon the healing influence of nature and time and upon psychosomatics engendered by confidence in the doctor. If we forego wishful thinking and properly credit nature, then the good results of medication can better be judged upon the aged animal than anywhere else. Here, the natural ability to recover is lessening, the habits and condition of the animal are fixed in the owner's mind, and developmental changes tend to be regressive; therefore, real curative or tempering effects of specific treatment can be subjected to critical judgment.

ENDOCRINE DISORDERS

Senescence cannot be regarded as caused purely by decline in sexual function, by hypothyroidism, or by failure of the adrenals, the parathyroids, or the pituitary. It is true that in aged dogs we do see certain changes attributable to degeneration or dysfunction of the sex glands. Enlargement of the nipples, swelling of the penile sheath, conspicuous mammary glands, loss of libido, thinning of hair on the ventral surface of the abdomen are all related directly to a decline in androgen production. Castration causes a marked improvement in general well-being in male dogs having these symptoms. In the aged bitch, sexual endocrine dysfunction manifests itself in less obvious physical signs, but estrual irregularity may indicate ovarian cysts or hyperplastic endometritis, or inguinal hernia may result from androgen secretion. Successful ovariohysterectomy never fails to improve the general condition of the aged patient when it is done for correction of either of these pathologic signs. With proper anesthesia, careful technique, and proper pre- and postoperative care, there should be no hesitancy in removing the gonads of an aged patient.

VITAMINS AND DIET

As Tuohy (*J. Am. M. A.*, 1943) points out, age imposes certain deprivations due to failing digestion and absorption so that, even when a reasonable diet is consumed, certain deficiencies result. The loss of teeth may contribute to malfunction of the digestive tract even though dogs are notoriously poor chewers. Decreasing efficiency of the glands of digestion contributes to incompleteness of digestion, latent vitamin deficiency disease, and pathologic senility (Stephenson and Korenchevsky, *Brit. M. J.*, 1941).

Nicotinic acid deficiency in the dog is most frequently thought of in terms of blacktongue and the pellagra-like symptoms of glossitis, stomatitis, diarrhea, and anorexia. Closely interlocked is riboflavin which, if low in the diet, may produce mouth and tongue lesions. In treatment, I prescribe the B complex or a potent plurivitamin tablet.

Diet.—The veterinarian must assume the rôle of a dietician and often it is difficult to plan a sound and adequate diet to meet certain nutritional requirements and still have it palatable. A veterinarian in small animal practice should have a dog or two in his life to acquaint him with the vicissitudes of dog owning. Small matters may make the difference between success or failure of the diet prescribed.

For instance, we find it helpful to give a

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Assistant chief veterinarian, Angell Memorial Hospital, Boston, Mass.

high carbohydrate diet to animals with chronic nephritis. Such a diet might include cooked cereal, *i.e.*, rice, farina, cream of wheat, or oatmeal with milk and sugar or Karo syrup added to entice the dog to eat. The addition of a bouillon cube or two to the cereal while it is cooking may add palatability to the meal, or very small amounts of meat can be cooked in the cereal to give the desired flavor.

CHRONIC COUGH

Old dogs of the Pomeranian or Spitz breeds which are chronic and shrill barkers may develop a cough due to laryngeal irritation of barking. Other dogs may acquire a persistent, hard, brassy cough due to chronic bronchitis or to pulmonary edema, presumably induced by cardiac senility.

Coughs of this nature are not only distressing to the dog but to the family as well. Their control is often quite difficult. If the cough is primarily laryngeal, the control of the dog's barking, in so far as possible, should be the first aim. Phenobarbital, a syrupy cough mixture, or honey may be beneficial. The administration of digitalis to the dog with a chronic bronchial cough may prove helpful. If the cough is severe and intractable the following routine may prove helpful. The dog should be hospitalized and sufficient Demerol* should be administered at four- to six-hour intervals to give absolute rest from the coughing seizures. This drug seems to quiet the most intractable cough without producing vomiting. Foci of infection, such as infected teeth, ears, or anal glands, should be eliminated in the control of coughing in an aged dog. An aged animal should most certainly not make frequent trips up and down the stairs.

CHRONIC NEPHRITIS

Uremia is a frequent cause of death in the aged dog, although such dogs may live throughout a good part of their lives with badly damaged kidneys. The onset of colds, a tiring experience, a bath following which the animal is not properly dried, or exposure to a nonspecific respiratory infection in a hospital or boarding kennel may place sufficient burden on already damaged kidneys so that uremia results.

A dog with uremia should be hospitalized. It is almost imperative that saline and dextrose or 5 per cent dextrose solution be administered. Care must be exercised to see that too much salt is not given and clyses of saline solution should not be repeated. All food should be withheld and if the acute condition persists for more than forty-eight hours some protein, in the form of amino acids, should be administered. We have found Parenamine† to be helpful. When the animal's appetite returns, a high carbohydrate diet should be prescribed indefinitely. The administration of thiamin chloride is very helpful in aiding the return of the appetite in aged animals that have been ill, and plurivitamin treatment has good scientific basis.

*A product of the Winthrop Chemical Company.

ANESTHESIA, DENTISTRY, AND SURGERY

The choice of anesthesia is actually one for the individual to make, since his results will probably be better with the agent with which he is most familiar. For dentistry, a parenteral anesthetic is most suitable; an inhalation anesthetic lends unnecessary danger to the procedure. For short operations, pentothal sodium should be given in doses of 1 gr. to 5 to 10 lb. of body weight, depending upon the toxicity or senility of the patient. One-half of the estimated dose is given rather rapidly, and when normal respiration is resumed, a dose sufficient to allow completion of the operation without pain is administered more slowly.

For more prolonged surgical operations, a freshly prepared solution of pentobarbital sodium is safe, but such solutions tend to break down on standing, and the toxic symptoms of excitement on induction and prolonged sleep are more apt to occur when old solutions are used. It is well to use a small (25) gauge needle to prevent rapid injection, and to dilute the solution so that 2 cc. of the solution contains 1 gr. of the drug. To facilitate careful measuring of the dose, the smallest possible syringe is used. The administration should be stopped short of a loss of the reflex response to pinching of the toe of a hind foot.

Surgical dentistry consists in the removal of teeth affected by suppurative alveolitis and in scaling of tartar deposits from sound teeth. When badly infected mouths are invaded, it will be found helpful to administer sulfathiazole prior to operation and to pack the infected alveoli with sulfathiazole powder subsequent to extraction.

†A product of the Frederick Stearns Co., Detroit, Mich.

Arthritis

Arthritis in the aging dog seems directly related to infection in the dental alveoli, ears, anal glands, or in the gastrointestinal tract. Certainly, infected teeth should be extracted as the preliminary treatment of arthritis. Arthritic dogs begin to show a drag in the hind legs, scuffing the toes as the legs are brought forward, and a swaying of the rear of the body, especially on quick turns. No happy solution to this condition can be offered. We eliminate sources of focal infection and prescribe liberal administration of brewer's yeast to facilitate intestinal motility and inform the owner that the disease is progressive.

Surgical Operations

Asepsis, meticulous techniques, and pre- and postoperative care are far more essential to recovery in the aged animal than in the young. The control of hemorrhage during operation may also be essential to the survival of the aged dog. The use of whole blood postoperatively is definitely indicated where there has been much blood loss, and the veterinarian is advised to give it prior to the appearance of shock, rather than waiting until shock symptoms are marked.

When blood was not available, we have used Parenamine, previously mentioned, intravenously after the operation as a blood substitute with good effect. Dextrose or dextrose and saline solutions do not suffice for the aged animal, or for any animal which has become depleted preoperatively by virtue of curtailed intake of food or through vomiting, diarrhea, or depletion engendered by the presence of a malignancy or a wasting disease.

Euthanasia

It is the duty of the veterinarian to see that his patients' lives are prolonged so long as their continued life is humane. It is also his duty to see that they die gracefully when continued life is not warranted by humane and practical aspects of the owner-animal relationship. The owner will feel more kindly toward the veterinarian as time assuages the first loss of his pet if he recalls that death was without suffering and truly for the best.

The use of pentobarbital sodium solution intravenously has no peer for euthanasia. A *double strength* solution is prepared by adding:

259.2 Gm. pentobarbital sodium.
200 cc. 95 per cent alcohol.
q.s. ad. 2,000 cc. physiologic saline.

This solution is bottled in discarded serum bottles and kept at hand at all times. *This is a double strength solution for euthanasia only.*

Intravenous injection into the radial vein is quite practical even in the senile animal, cat or dog. A maximum of 1 cc. of solution per 5 lb. of body weight is given, and this amount may be reduced considerably if the animal is senile or very ill. The owner should always be invited to see the injection given, but not urged to stay if he or she is not so inclined.

Artificial Insemination of Cows Steadily Increases

Current indications and predictions from hither and yon continue to reveal a gradual and wholesome gain in artificial insemination of cows which, in the face of considerable experience during the last ten or more years, shows that the practice is fitting itself permanently into American dairy-farm conditions. The Massachusetts Selective Breeding Association asserts (*The Milkpail*, Sept.-Oct., 1946) that this type of breeding is now available on a state-wide basis. It has a battery of 20 proved bulls at its headquarters in Shrewsbury, a crew of 15 trained inseminators, and a modern laboratory. An average of 75 cows are inseminated daily. Lack of financial support through insufficient membership of breeding societies is pointed out as the main deterrent to the expansion of dairy-cow insemination. There is no alternative to refined technique.

The red cell count and the hemoglobin content are higher in the Thoroughbred than in the cold-blooded horse, while the quantity of hemoglobin per cell is smaller. Two physicians, Drs. John Macleod and Eric Ponder, brought these facts to the attention of veterinarians.—*Blood Horse, Feb. 9, 1946.*

The aim of all surgical procedures should be a prompt return to normal life after operation, without undue upset of bodily functions.

Elastration

To perform this operation you'll need an elastrator, a new instrument recommended and distributed by the California Wool Growers Association, whose headquarters are at 151 Madison Street in San Francisco. See the advertisement on page *vii* of the March JOURNAL.

The elastrator is, in fact, an applicator; it applies a strangulating rubber ring of special material and design to the scrotum, above the testicles, and leaves the scrotum and gonads to the mercy of the ischemic isolation. Takes but a moment to apply it. No infection, no complication, no blood are the advantages acclaimed. In twenty-one days or so, the entrapped structure drops off. Thousands of lambs castrated with the elastrator speak for its merits. Mention is made of its use for docking, also. Comments from the range country are invited.

Picrotoxin Barbiturate Antidote?

Picrotoxin ($C_{30}H_{34}O_{13}$) is the active principle of *Cocculus indicus*, excitant and convulsant of the central nervous system. It has been used in medicine since 1875 but came into prominence only with the extensive use of barbiturates for general anesthesia in the early 1930's. On account of many toxic and fatal accidents from their use, Tatum in 1931 rediscovered picrotoxin in his systematic search for an antidote.

Picrotoxin does not counteract the barbiturates directly but offsets their action until the depressant effect passes off. As Boyd (*Current Medical Digest*, July, 1946) writes, "A poisoning is superimposed upon another poisoning." Its action is exerted chiefly on the medulla oblongata and spinal centers and thus supports the depressed vital cardio-respiratory centers. It is the perfect antidote for barbiturate coma and respiratory collapse and should, therefore, be in reach when such anesthetics are employed.

In human surgery, a solution of 1 mg. per cubic centimeter is given intravenously as a drip at the rate of 1 cc. per minute—maximum dose in twenty-four hours, 1,450 cc., or at that rate for shorter periods. In severe cases, a large initial dose is required. The dosage for animals will be regulated on the basis of body weight. Commercial products contain accurate directions. The surgeon of human medicine aims to keep the patient in a state of hyperreflexia, *i.e.*, there should be a response (twitching) to pinching, tapping, or the stick of a needle. Fortunately, in animal surgery, anesthetic deaths from the barbiturates now commonly used are declining.

Xenon, a Nonexplosive Anesthetic.—During the course of studies on high-altitude sickness, workers at the University of California stumbled upon the effective nonexplosive anesthetic, xenon, a rare gas forming about a 170-millionth part of the atmosphere. In addition to obvious physical anesthetic effects on human subjects and mice, this inert gas permeates the spinal cord and entire nervous system of mice in the manner characteristic of general anesthetics. A mixture of 70 per cent xenon and 30 per cent oxygen produces temporary staggering, stupor, and paralysis.—*From Science Digest, Nov., 1946.*

Duodenal ulcer in a 7-month-old Dachshund bitch is reported by Dr. W. C. Hesketh (*Vet. Rec.*, Sept. 21, 1946). The patient died several hours after removal of a section of the bowel containing three nonperforating ulcers.

Painting the affected surface of the vagina with a saturated solution of gentian violet at weekly intervals is an effective treatment for granular vaginitis in cows. —*Jen-Sal J., July-August, 1946.*

Athough plasma gives good results in the treatment of shock where the blood loss is slight, whole blood is necessary for the treatment of hemorrhage.

From 50 to 90 per cent of the live pigs born to Brucella-infected sows die in less than four days.—*Dr. I. Forest Huddleson, East Lansing, Mich.*

Delayed healing and infection of wounds may indicate carelessness in selecting and applying dressings.

Rayon is reported to be an excellent material for dressings used in immediate contact with surface wounds.

Chemotherapy should never be used as a substitute, but as an adjunct of adequate surgery.—*Bull. U. S. Army Medical Department.*

CLINICAL DATA

Clinical Notes

The skin of a young calf is quickly burned by direct sunlight.

Cats are highly susceptible to both human and bovine tuberculosis.

When you see hens with long claws and nails, suspect tuberculosis.

The new, potent rabies vaccine protects 80 per cent of the animals vaccinated before exposure.

When the calcium content of blood drops one-half, and the calcium-phosphorous ratio is similarly disturbed, coma results.

Newcastle disease virus apparently caused conjunctivitis among a group of women employed where infected birds were slaughtered. — *Haver-Glover Messenger, November, 1946.*

Heredity plays a larger part in bovine sterility than had previously been suspected, says W. M. Regan, of California (*Western Livestock Journal*). Five Jersey bulls and 1 Holstein-Friesian produced 20 sterile daughters, and all could be accounted for by a specific gene for sterility.

Rinderpest research and botulinus toxin isolation share third place in a list of ten important science advances in 1946 selected by Watson Davis, director of Science Service. Application of radioactive isotopes to medical research heads the list, with synthesis of penicillin and vitamin A in second place.

Phenothiazine in Turkey Growing.—Phenothiazine, mixed with the growing mash at the rate of 1 lb. per 100 lb. of the mash, breaks the life cycle of the cecal worm and is, therefore, regarded as a successful preventive of blackhead. It is fed for three-day periods every three weeks during the summer after the poults are turned out to range.

Thickening of the heart valves in dogs and pigs is associated with chronic kidney diseases.

Common symptoms of Salmonella infections in mink are a tarry diarrhea and dark fluorescent intestines.

About 80 per cent of a single dose of penicillin is eliminated by the renal glomeruli and tubules, and can be recovered in the urine within two hours of injection.

A hen requires but 4 to 6 lb. of feed to maintain her weight and energy and to produce a dozen of eggs weighing 18 to 22 oz.

In pink-eye, penicillin and the sulfonamides are effective only in controlling the secondary invaders. When the epithelium alone is invaded, treatment will produce recovery in a week or two; if deeper involvement is present, the condition is chronic.—*Dr. E. M. Baldwin, Omaha, Neb.*

In the prevention and treatment of shipping fever in dairy cattle, it is essential to prevent dehydration.—*Dr. Harry Caldwell, Wheaton, Ill.*

Hemolytic Anemia Neonatorum.—While the intersexual incompatibility disclosed by the discovery of the Rh and other factors in the parental blood has not been discovered in any animal except the primates, it does lead to the suspicion that we still have much to learn about the erythroblastosis of the newborn besides lack of sunlight and unbalanced ration during gestation. When W. L. Williams (*U.S.L.S.S.A.*, 1921) got huffed over the charge that all newborn mortality was due to germs, he was probably talking of aberrant physiology, a quarter of a century ahead of his day.

Panel Discussion on Penicillin in Small Animal Practice

At the Boston Session of the Association, August 18-22, 1946, the following panel discussion was conducted in the Section on Small Animals. The members of the panel were Dr. H. C. Stephenson, Ithaca, N. Y., moderator; Dr. David Hopkins, Brattleboro, Vt.; Dr. C. P. Zepp, New York, N. Y.; and Dr. Stanley Phillips, Medford, Ore.

MODERATOR H. C. STEPHENSON (Ithaca, N. Y.).—We have had penicillin available to us now for a little over a year in quantities which we can use in our practice. Dr. Fleming's first article was really the basis of all the work that has been done with penicillin since then. The first thought of penicillin was of its being inhibiting, and Fleming's report said:

"One means of demonstrating the inhibiting and bacteriolytic properties is by streaking cultures of various organisms across an agar plate in which there is placed a furrow of agar containing penicillin."

Certain cultures die and others live and, using this as a way of classifying the bacteria, he says:

"Penicillin belongs to the group of slow-acting antiseptics, and staphylococci are only completely killed after an interval of over four and a half hours even in a concentration 30 or 40 times stronger than is necessary to inhibit completely the culture in broth."

We want to talk that point out. We are clear now on what he found out in 1929. It is slow-acting. "The action is very marked on the pyogenic cocci and the diphtheria group of bacilli. Many bacteria are quite insensitive, *e.g.*, the coli-typhoid group, the influenza-bacillus group, and the enterococci."

We don't have to be bacteriologists to realize what that means. This is a specialized material. He observed when he injected rabbits with large quantities of his broth culture: "Penicillin is nontoxic to animals in enormous doses and is nonirritant. It does not interfere with leucocytic function to a greater degree than does ordinary broth." Today we are using a refined product. One last quotation: "Penicillin treatment should not be applied in infections by microörganisms which are not sensitive to the drug."

Those are quotations from Fleming in an article written in 1929, the first article about this material. We have had penicillin for a little over a year, and it is time for us as practitioners to review and discuss our work. I will ask Dr. Zepp to open the discussion; Dr Hopkins will follow, and then Dr. Phillips. After that, I have assembled a number of questions from different sources, and we will ask these men to answer them. Questions from the floor will have priority over the prepared questions. Dr. Zepp!

DR. C. P. ZEPP (New York, N. Y.).—I will present the dynamics of penicillin.

Penicillin has a bacteriostatic or inhibiting effect on bacteria. It is reported to have a greater bacteriostatic power than the sulfa drugs. Penicillin is selective in its action, being principally active against the gram-positive type of organism and some others. We have no means of telling from our practice offices which is gram-positive and which is gram-negative; in fact, the cases do not usually last long enough to attempt to find out.

In order to study the mechanics of a bacteriostatic effect of penicillin upon the organism, a number of factors must be considered. Penicillin must be so applied or administered that it will reach the organism. For example, in treating such areas as the pleural cavity, the peritoneal cavity, joints, bursae, abscesses, the brain, or spinal cavities where systemic therapy will not penetrate the cavity, and in certain skin infections, direct injections or topical applications must be employed. This is very important because it has an inhibiting effect only if the penicillin gets to the organism in proper concentration and for a long enough time.

Another factor which must be considered in penicillin therapy is the length of time treatment must be carried out, because it has only a bacteriostatic effect instead of a direct killing effect. The length and rate of treatment depends upon the severity of the infection and the type of organism involved, as well as upon the physical condition or power of resistance of the patient to the infection. Also, the fact that bacteria build up a resistance to penicillin must be considered.

Because of the bacteriostatic effect of penicillin and because bacteria build up a resistance against it, the case must be carefully watched for maximum effect of the treatment, and one must not be discouraged if the often-published results are not obtained.

Penicillin is not a cure-all, but it is an excellent drug for certain conditions if used properly.

A great advantage of penicillin is that it can be used with practically all other drugs; in fact, to obtain the maximum effect from penicillin, the sulfonamide drugs should be used along with it.

The dosage of penicillin varies with the severity, location, and type of the infection. I usually give 5,000 units per pound. That would mean 50,000 units to a 10-lb. dog per day, 150,000 units per day to a 30-lb. dog, etc. The maintenance dose would be 5,000 units per pound per day. If there is a drop in the temperature following the use of penicillin, and then a rise, I increase the dose, feeling that it is inadequate. When the temperature falls to normal following the initial dose and remains normal for two or three days, I discontinue the penicillin and watch the temperature closely.

If there is a recurrence of fever, penicillin is again administered, using a large dose, on the assumption that the organism was not completely inactivated and that it may have gained a resistance against the treatment. This same procedure of increasing the dosage is used in cases where a mild drop in temperature followed the first and second treatment, but not a drop to normal. In such cases, there is a severe infection which requires a greater amount of penicillin, or the bacteria have developed a resistance to the drug, making larger doses necessary in order to effect complete bacteriostasis.

I will mention a few cases in which we have found value in the use of penicillin:

Undetermined Fevers.—I do think we have obtained results in some of these.

Conjunctivitis.—In this case, I use penicillin: if it is an old chronic case, both internally and externally.

Furunculosis of the Dog.—Here, it should be used locally and internally, and for a long time.

Ear Infections.—In ear infections, including the ear canal with inner infections, use both internally and externally. I use the beeswax and oil preparation in the ear about twice a day, as well as intramuscularly twice a day.

Meningitis in Dogs.—In treating meningitis cases, one must penetrate the brain cavity, and that is too difficult a problem. In most cases, the dog dies if injected intracranially every three hours. So I use penicillin intravenously in dilute aqueous or saline solution, hoping by that means to get the penicillin into the cranial cavity. Such injection must be almost continuous to be effective.

Moderator Stephenson.—Thank you, Dr. Zepp. Now, Dr. David Hopkins, of Brattleboro, Vt., will relate some of his experiences. Dr. Hopkins!

Dr. Hopkins (Brattleboro, Vt.).—Since penicillin has been available to veterinarians, I have used it on cases where it was expected to produce favorable results. I have only used it in a few infections where the causative organism was not known to be susceptible. The fault was that I have not routinely obtained a laboratory report, as would be desirable on all cases.

A few of the advantages of penicillin compared with some of the other new drugs are: (1) It is practically nontoxic in therapeutic concentration. Some medical men have reported certain minor undesirable reactions. These may be due to impurities. The more highly refined, crystalline form may eliminate some of the reactions. (2) There is little danger of overdosing. (3) It does not seem to be incompatible with other drugs, antiserums, or articles of the diet. (4) The animal owner wants it and sometimes demands it. The latter is the only instance in which I occasionally use penicillin where it may not be indicated. But when we consider that most of us have much to learn about this new antibiotic agent, this demand may uncover a new use for it.

I frequently use penicillin in conjunction with other drugs, especially the sulfonamides. This practice does not always allow one to draw conclusions as to which gave the results but, after all, it is results we want and with more experience we shall be able to determine what relieved the patient. It is well known that susceptible bacteria may become resistant to penicillin during the treatment of infections, but this does not make them resistant to the sulfonamides.

Until recently, I have given penicillin in aqueous solutions. Now, I prefer to begin treatment with a rather large dose in an aqueous solution, continuing it in peanut oil and beeswax as a vehicle. The latter, as you all know, slows the liberation of penicillin, prolongs its action, and provides enough units for most cases if given only two or three times in twenty-four hours. This procedure has a decided advantage over giving it every three hours, as we had to do when using it only in aqueous solution. Whether the same results are obtained is a question.

I have usually administered penicillin in the muscle, changing the site of injection. I have used some of the crystalline form subcutaneously. Of course, that in the peanut oil and beeswax vehicle was given intramuscularly.

In regard to the dose per day, I have varied this according to the weight of the patient and the condition treated. There seems to be no set rule concerning dosage or duration of treatment because of the wide variation in the susceptibility of different organisms to it. I have endeavored to treat the individual patient and study the response. To the average-sized Cocker Spaniel I give 50,000 to 100,000 units per day. The penicillin is continued for one or two days after the patient has shown definite improvement.

Some of the conditions in which I have observed favorable results are:

1) Wound infections, with or without the development of bacteriemia; abscesses following traumatic injuries; and an occasional postoperative infection.

2) External diseases of the eye; superficial infections of the conjunctiva, cornea, and lids. (In most of these conditions, I have used penicillin intramuscularly but also topically in some cases, generally in an ointment—1,000 units per gram.)

3) Acute osteomyelitis, occurring from compound fractures.

4) Acute septic metritis in bitches. (Two apparently hopeless cases responded to penicillin following cesarean section, removal of the dead pups, and drainage of the pus from the uterus.)

5) Superficial skin disease when pustules were present—also in mild burns.

6) Acute mastitis in dogs and cats.

7) Some respiratory infections.

I believe I have had a degree of success in certain forms of feline distemper, gram-positive infections of the urinary tract, and leptospirosis.

I have been unable to observe any desirable

results in virus diseases, such as canine distemper and feline infectious enteritis; deep-seated eye infections; such nervous diseases as meningitis and encephalitis; or any infections caused by gram-negative bacteria.

We should not expect miracles from penicillin, although it is, without doubt, one of the most effective agents for the treatment of infectious diseases yet discovered. It is not a substitute for adequate surgery, tried and proved therapy, and proper supportive treatment. It must be remembered that its action is selective. Treatment should be started early and with sufficient dosage; otherwise, the infective organism may become resistant early. Penicillin must be continued longer in some cases than in others. The only rule one can follow is to treat the individual patient and study the response to treatment.

Penicillin therapy is still in the stage where much more research is needed, but it should have an important place in small animal practice.

MODERATOR STEPHENSON.—Thank you, Dr. Hopkins. Now Dr. Stanley Phillips, of Medford, Ore., will give us a résumé of his experience, in the use of penicillin. Dr. Phillips!

DR. STANLEY E. PHILLIPS (Medford, Ore.).—What I intended to say has already been said, but I shall try to fill in a few gaps. I want to emphasize that we have a valuable addition to the ordinary therapeutic armamentarium in pencillin, but it should never, and will never, take the place of sound surgery and sound diagnostic procedures. Penicillin will do wonders for us, but we must not ask the impossible.

All of us have been gratified by the results obtained with penicillin, particularly in large doses in acute Staphylococcus and Streptococcus infections. This covers a multitude of evils for both the small animal and general practitioner; for instance, in our so-called distempers. Certainly, severe cases and particularly those which do not respond to large doses of serum by a drop in temperature may be given penicillin with some hope of results.

There are one or two things which have been very, very stubborn and in which penicillin is of great value. One is chronic eye infections. If one pays careful attention to the general principles of treating chronic eye infections in which astringents must be used, these may be supplemented by penicillin injections and perhaps penicillin ointments with gratifying results.

I sometimes wonder how much good is accomplished by the penicillin in ointment, and how much by the lubrication from its base.

Serpiginous ulcer, which covers the whole cornea within twelve to twenty-four hours, sometimes with large masses of purulent matter, in the past has meant loss of the eye, and if it were not removed, sympathetic infection attacked the other eye. Here, we have been gratified with results from large doses of penicillin. We have often given 100,000 units morning and evening in such cases, which is higher dosage than we expect to use ordinarily. In many of these cases we started getting a smooth edge to the ulcer in forty-eight hours and its spreading stopped.

In our part of the country dogs have many foreign bodies in their ears. It is not uncommon to have 12 or 15 cases of acute otitis in a day. Many of these are very acute. The animals have suffered severely. Our antiseptics have not helped. We were never successful in treating these cases in the past, because of the exuding membrane inside of the ear. We have tried preparations of equal parts of liquor antisepticus and peroxide with an ounce of Fowler's solution, which will clean up the membrane. After it was dried off and swabbed with a weak solution of silver nitrate (1/2 of 1%), a strip of half-inch gauze was soaked in penicillin solution (about 5,000 units to 1 or 1 1/2 oz.), packed down in the ear, covered with a swab of cotton also soaked in the solution, and left for twenty-four hours. The following day, the ears were left open, using penicillin solution or sometimes changing to commercial sulfanilamide, sulfathiazole, sulfathiazine, or sulfadiazine. Cases which used to take a long time responded within twenty-four to forty-eight hours. Many of the cases which previously required complicated treatment responded promptly. We have been using smaller doses of sulfonamides in recent months and apparently can use even less.

We take our tip from the human surgeons. In the wounds in which we hope to get first intention healing, we wash with saline, flush with penicillin solution, wash again, dry, and close. For the following forty-eight or seventy-two hours, we are careful to keep up the penicillin therapy and, if successful, we get first intention healing on massive lacerations, which was not experienced before.

For the busy practitioner, penicillin-oil-wax is a most valuable addition to the use of penicillin. I have had trouble and have not been proud of penicillin therapy when saline or aqueous solution was used. Most of us don't get back to the case every three hours. Where it is possible to use it every twelve hours instead of every three, there is no reason why we can't conduct adequate and positive penicillin therapy.

MODERATOR STEPHENSON.—Thank you. Did you notice they were all enthusiastic about penicillin but conservative? Every one of them pulled his punches a bit.

Dr. Hopkins, what type of penicillin preparation do you use locally?

DR. HOPKINS.—I commonly use two forms of ointment—(1) ophthalmic ointments for superficial eye infections already mentioned, and also an ointment for skin conditions where we have pus formation, and (2) I use an aqueous form in some badly infected, deep wounds. I have used a pack and sewed that pack in place for a period of time, and also injected the aqueous solutions in and around the infected area. I have generally used concentrations varying from 5,000 to 10,000 units per cubic centimeter of distilled water.

MODERATOR STEPHENSON.—I didn't quote from Fleming on this particular point, but it is interesting to note he discovered in his early work

that his broth culture would clean up some eye infections in the small animals when they flushed the eye with original broth solution after getting out the débris.

Another question: Dr. Hopkins, do you find that two injections per day of penicillin in beeswax or oil is as effective as more frequent injections of aqueous solutions?

DR. HOPKINS.—I have used peanut oil and beeswax preparation for about two months. I don't want to speak too definitely about it. I make a practice in severe, serious infections to give an intravenous, as well as an intramuscular, dose in the aqueous form first. In that way, we get a high level in the blood stream much more quickly than we do with peanut oil and beeswax; then I follow with the peanut oil and beeswax, and I think I can say that, in most cases, I have observed about as satisfactory results by giving two or three doses in peanut oil and beeswax per day as I did when we tried to give it every three hours.

There is a question in my mind and I think in many veterinarians' minds, who have used penicillin in this form, whether we do get the same effect.

MODERATOR STEPHENSON.—A number of colleagues have sent up a question regarding the use of penicillin in leptospirosis. Do you mind opening that discussion, Dr. Zepp?

DR. ZEPP.—I have had very little success with it, for the simple reason I have had very little leptospirosis. I must admit that I have not had a case of leptospirosis to try it on.

MODERATOR STEPHENSON.—Do you care to speak on the question, Dr. Hopkins?

DR. HOPKINS.—Recently, a cocker spaniel came in and we looked the dog over very carefully. I have a new assistant and he was sure of his diagnosis, but I have always been a little stubborn about making a diagnosis of leptospirosis.

I gave this dog the usual treatment for gastric trouble with toxemia, but after a day or two I did give it quite liberal doses of penicillin for two or three days, and continued the other treatment also. Much to my surprise, the dog made quite a rapid recovery.

This report is not of much value except that the symptoms of leptospirosis could be read into this case, and after the administration of penicillin something happened. A colleague in a neighboring state feels quite certain he has had some favorable results with penicillin in leptospirosis.

DR. PHILLIPS.—We have treated 10 to 12 cases of it where we have felt quite confident of the diagnosis. Dr. Herrick Wheeler, of Klamath Falls, Ore., who has an acute problem of leptospirosis, reports that he has fair results, but quite a few relapses, and the relapses are almost always fatal. He sends the dog home and in two to three months leptospirosis will recur; then he expects to lose that dog, but he has had good results by treating initial cases and early cases.

Q.—Is penicillin effective after a relapse?

DR. PHILLIPS.—It is a little hard for a practitioner to evaluate the degree of penicillin-fast state that an organism will take. I think we have all used sulfonamide drugs long enough to have had cases in which they did not prove satisfactory, and the same thing happens to penicillin. I believe we can prevent it by continuing treatment for forty-eight hours after the temperature goes down, at least on a modified scale. I have not had a lot of experience with penicillin-fast organisms.

MODERATOR STEPHENSON.—We are cramped for time, but I should like to ask Dr. Hopkins this question: Have you used penicillin in the treatment of compound fractures?

DR. HOPKINS.—I have, in a limited number of cases, used it locally around the point of injury and at the same time have given it intramuscularly. I think it has been an aid in compound fractures following car accidents, and the like.

Q.—Dr. Zepp, have you used penicillin ointments?

DR. ZEPP.—Yes, with good results in ordinary infections. In severe, chronic conjunctivitis, some cases that have existed six months or a year or longer have responded following the use of penicillin ointment in the eye, and intramuscular injections twice a day with penicillin in oil.

Q.—Dr. Phillips, is it wise to use sulfonamides simultaneously with penicillin therapy?

DR. PHILLIPS.—I think most of us have done that. Theoretically, perhaps it is not necessary, but I think in most cases we get better results quicker with less dosage.

MODERATOR STEPHENSON.—I want to thank you for your participation in the panel, and, my colleagues, I want to thank you for your forbearance. (Applause).

The Intradermal TB Test

The use of Koch's tuberculin intradermally for diagnostic purposes was first announced by Ch. Mantoux in a communication to the *Société de Biologie* of France in 1911. The tests were made on experimentally infected laboratory rodents and later confirmed on large animals at the Alfort clinic. But, proof of its merits in cattle on a large scale was first established by Dr. D. F. Luckey, state veterinarian of Missouri during the teen decade. Dr. Luckey opened the way to nation-wide bovine tuberculosis eradication. For his observations, he was awarded the Twelfth. International Veterinary Congress prize of the AVMA. In human medicine, intradermal tuberculinization is still called the Mantoux test.

In the Deep South, says "Veterinary" in *Successful Farming*, where cows winter on brown grass, there is reason to believe that vitamin deficiency does predispose to acetonemia.

Newcastle Disease Diagnostic Facilities in the States

According to the latest information released by the Bureau of Animal Industry, USDA, under date of Feb. 14, 1947, the following is the present status of the facilities for the diagnosis of Newcastle disease in the various states.

State and Institution	Provisions Available for Laboratory Tests			Live Bird Isolation Facilities
	Hemagglutination-Inhibition Test (HI)	Serum Neutralization Test (SN)	Virus Isolation	
CALIFORNIA (U. Calif., Div. Vet. Sci., Berkeley).....	Yes	Yes	Yes	Yes
CONNECTICUT (Agric. Exp. Sta., Dept. Anim. Dis., Storrs)	Yes	Yes	Yes	Yes
DELAWARE (Agric. Exp. Sta., Dept. Anim. Ind., Newark)	Yes	No	No	No
IDAHO (Agric. Exp. Sta., Moscow)	Yes	Plans made	Plans made	No
ILLINOIS (Univ. Ill., Dept. Anim. Path. & Hyg., Urbana)	Yes	Yes	Yes	No
INDIANA (Purdue Univ., Dept. Vet. Sci., Lafayette).	Yes	Yes	Yes	Limited
IOWA (Iowa State College, Vet. Res. Inst., Ames).....	Yes	Yes	Yes	Limited
KANSAS (Kans. State College, Div. Vet. Med., Manhattan)	Yes	No	No	No
KENTUCKY (Agric. Exp. Sta., U. Ky., Lexington)...	Yes	Yes	Yes	Limited
MICHIGAN (Mich. State College, E. Lansing)	Yes	Yes	Yes	Plans made
MARYLAND (U. Md., Livestock San. Serv., College Park)	Yes	Yes	Yes	Limited
MASSACHUSETTS (Mass. State College, Dept. Vet. Sci., Amherst)	Yes	Yes	Yes	No data
MINNESOTA (Agric. Exp. Sta., Div. Vet. Med., Univ. Farm, St. Paul).....	Yes	Yes	Yes	Limited
MISSOURI (U. Mo., Dept. Vet. Sci., Columbia	Yes	Yes	Yes	Limited
NEVADA (U. Nev., Reno)...	No	No	No	No
NEW MEXICO (Agric. Exp. Sta., State College).....	No	No	No	No
NEW JERSEY (Agric. Exp. Sta., Dept. Poult. Husb., New Brunswick)	No	Yes	Yes	Yes
NEW YORK (N. Y. State Vet. College, Cornell, Ithaca)...	Yes	Yes	Yes	No
NORTH CAROLINA (State Dept. of Agric., Raleigh)..	No	No	No	No
NORTH DAKOTA (Exp. Sta., Fargo)	Yes	Yes	Yes	Limited
OHIO (Exp. Sta., Reynoldsburg)	Yes	Yes	Yes	Plans made
OREGON (Oregon State College, Dept. Vet. Med., Corvallis)	No	No	No	No

State and Institution	Provisions Available for Laboratory Tests: Hemagglutination-Inhibition Test (HI)	Serum Neutralization Test (SN)	Virus Isolation	Live Bird Isolation Facilities
PENNSYLVANIA (State Dept. Agric., Bureau Anim. Ind., Harrisburg)	No	No	No	No
RHODE ISLAND (Agric. Exp. Sta., Dept. Poult. Husb., Kingston)	No	Yes	Yes	No data
SOUTH CAROLINA (Agric. Exp. Sta., Clemson)	Being organized	No	No	No
SOUTH DAKOTA (Exp. Sta., Brookings)	Yes	...	...	...
TEXAS (Exp. Sta., College Station)	Being organized	No	No	Limited
UTAH (Exp. Sta., Logan)	Yes	Yes	Yes	Limited
VIRGINIA (Dept. of Agric., Anim. Dis. Lab., Harrisonburg)	Yes	No	No	No
WASHINGTON (West Wash. Exp. Sta., Puyallup)	No	No	No	No data
WISCONSIN (U. Wis., Dept. Vet. Sci., Madison)	Yes	Yes	Yes	Facilities being prepared
BAI (Washington, D. C.)	Yes	Yes	Yes	Limited

Distribution by States of Newcastle Disease as Determined by Laboratory Diagnosis, as of Feb. 14, 1947

Virus Isolation	Hemagglutination-Inhibition Test	Serum Neutralization Test
Arkansas	Montana	Illinois
California		Nevada
Colorado		New Hampshire
Connecticut		New Mexico
Delaware		North Dakota
Indiana		Ohio
Kentucky		Pennsylvania
Maryland		South Dakota
Massachusetts		Texas
Michigan		Utah
Minnesota		Washington
Missouri		Nebraska
New Jersey		
New York		
Rhode Island		
Virginia		
Wisconsin		
Iowa		

Of all adult males in the United States today, nearly 29 per cent are ex-GIs.

By administering estrogens to Rhode Island Red cockerels 7 to 8 months old, a meat bird may be produced which compares favorably with the capon, says P. D. Sturkie (*Poult. Sci.*, Sept., 1946).

The Office of Veterinary Science.—Because the wonders and the bounties of the natural world are exhibited in vain to mankind, improving the public relations of veterinary medicine is one of its sacred obligations. Man is too busily engaged in other pursuits to see the disease dangers that beset what most concerns him—his domestic animals.

Turkey Raising Is Big Business

In the past twenty-five years, the raising of turkeys has changed from a minor farm enterprise to a major business.

Pomeroy and Fenstermacher, of the University of Minnesota, writing in *The Veterinary Student* (Iowa State College, Fall, 1946), point out that the United States raised about three million turkeys in 1920 as compared with approximately 45 million in 1945. They estimate that, of the total number of poults started in 1945, probably 15 million never reached the market, due to disease and unspecified causes. Deaths among turkeys of all ages cut the industry's marketable production by 25 per cent.

In order to remain big, the industry must reduce its losses from disease and improve the quality of its product. In connection with the former, there are many posts that can and must be filled by practicing veterinarians.

Effect of Volume of Distilled Water as Vehicle for Penicillin in Treating Chronic Streptococcic Mastitis

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VARIOUS INVESTIGATORS have shown that penicillin is an effective agent in the treatment of chronic streptococcic mastitis of cows, but the amount of diluent used in penicillin therapy shows considerable variation. At present, there is little published information on the volume of vehicle required for most effective treatment.

Kakavas[1] used 40 cc. of sterile distilled water as the diluting fluid for sodium penicillin for 30 quarters infected with streptococci of different types. Of these, 24 quarters or 80 per cent were cured, using varying quantities of penicillin for injection. Bryan, Huffman, and Horwood[2] reported on the treatment of 32 cows but did not state the amount of diluting fluid used. Of 16 cows treated with 10,000 units of penicillin per quarter, 12 recovered with one treatment. Slanetz and Allen[3] used 100 cc. of either distilled water or 0.85 per cent sodium chloride solution as the vehicle for sodium penicillin. They treated 59 quarters of 33 cows infected with *Streptococcus agalactiae*, and reported a recovery in 55 quarters. Murphy and Pfau[4] treated 52 quarters of 19 cows infected with *Str. agalactiae* with sodium penicillin. The amount of distilled water used as the vehicle varied from 50 to 300 cc. Of 15 quarters of 5 cows treated with a single injection of 5,000 to 200,000 units of penicillin, 33.3 per cent of the quarters were freed of infection. Barker[5] used 100 cc. of distilled water as the diluting fluid for sodium penicillin. Thirty-two quarters of 16 cows infected with streptococcic mastitis were treated. Sixteen quarters of the 32 responded to the treatment. Hardenbrook and coworkers[6] treated 44 quarters infected with streptococcic mastitis. They diluted the sodium penicillin in either 10 or 20 cc. of saline solution. One treatment with 25,000 units of penicillin per quarter resulted in a 61.36 per cent cure. Porter and coworkers[7] infused 210 quarters of 105 cows infected with *Str. agalactiae*. Five hundred cc. of distilled water was used as the vehicle for the sodium penicillin. A cure of 47 per cent was achieved with one treatment.

The purpose of this paper is to report the results obtained by using different volumes of distilled water as the vehicle for a given quantity of penicillin in treating chronic streptococcic mastitis.

MATERIALS AND METHODS

The mastitis cases in this experiment were from average-sized, privately owned dairy herds in southern Wisconsin. The 12 herds included in the study varied in size from 13 to 45 cows in lactation at the time of treatment. All cows were machine-milked and stripped by hand. In two of the 12 herds, the teat cups of the milking machines were dipped in a chlorine solution before milking each cow. None of the cows had been previously treated with penicillin. Diagnosis of streptococcic infection was made by the simultaneous use of the Hotis test, microscopic examination of incubated samples, and culturing on blood-agar medium. Difco blood-agar base was used for the culture medium and to it was added 5 per cent sterile cow blood. Milk dilutions of 1:10 and 1:100 were plated on the blood agar. Quarters which were found to be eliminating streptococci that had the colony characteristics of *Str. agalactiae* on blood-agar plates were treated when the Hotis, blood-agar plate, and microscopic tests were positive for streptococci. No biochemical or serologic methods were used for the identification of streptococci.

A composite sample of milk was taken from each cow in the herd on the first visit to the farm. Cows which showed positive or suspicious reactions were resampled on the second trip to the farm, and this time quarter samples were taken. The infected quarters of the cows were injected as soon as the results of the laboratory tests became available.

Three hundred infected quarters of 143 cows

Published with the approval of the director of the Wisconsin Agricultural Experiment Station. From the Department of Veterinary Science, University of Wisconsin, Madison.

*Deceased.

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The authors thank the other members of the Department of Veterinary Science for their aid and advice in this work.

The penicillin for this study was furnished by Merck and Co., Rahway, N. J., Chas. Pfizer and Co., Brooklyn, N. Y., and Commercial Solvents Corporation, Terre Haute, Ind.

were treated with a single dose and these were divided into three groups of 100 quarters each. The groups were selected to make them nearly equal with regard to herd, stage of lactation, and number of infected quarters per cow. The quarters in each of the three groups were assigned 10-cc., 100-cc., or 500-cc. volumes of distilled water, respectively, as the vehicle for the penicillin. When two or more quarters of a single cow were infected, they were all given the same volume of diluent in the treatment. Each quarter received 50,000 units of penicillin in one of the three volumes of vehicle. The distilled water was sterilized by autoclaving for thirty minutes at 15-lb. pressure. Sterile equipment was used for dilution and infusion of the penicillin. The 10-cc. volume was injected into the teat canal with a 10-cc. glass syringe and metal teat cannula, while conventional intravenous equipment was used to administer the 100-cc. and 500-cc. volumes by the gravity method. The apparatus was connected to a sterile teat cannula which was inserted into the teat canal. The penicillin was taken to the farm in powdered form and put into solution just prior to use. Infusion of lactating cows was made subsequent to milking and the quarters were milked out after twelve hours, but milking of the dry cows was delayed until the postparturient period.

The efficacy of penicillin therapy was ascertained subsequently by three laboratory tests. At least ten days elapsed between the time of treatment and the first samplings for laboratory test of the lactating cows. Thereafter, there were two more samplings made at weekly intervals so that the third and final tests were made at approximately four weeks after treatment. Each quarter sample was tested by the three methods already described. When three series of tests after treatment were negative for streptococci, the quarter was considered free of infection.

RESULTS

The efficacy of single treatments with 50,000 units of penicillin in 10 cc., 100 cc., or 500 cc. of distilled water as an intramammary infusion for elimination of streptococci is presented in table 1. The 10-cc. volume freed 52 of 100 quarters, the 100-cc. volume freed 54 of 100 quarters, and the 500-cc. volume freed 51 of 100 quarters. The data indicate that there was little difference between the efficacy of the various volumes of diluent.

The proportion of dry quarters freed of infection was higher than the proportion of lactating quarters, but this favorable influence in the dry group may be due to fewer quarters treated.

The number of quarters infected per cow was an important indication of the efficacy of treatment. Table 1 shows that 71.7 per cent of lactating quarters were cured when they occurred in cows having one quarter infected. The corresponding percentage of cures in cows with two quarters infected was 58.6 per cent, in cows with three infected quarters 43.3 per cent, and in cows with four infected quarters only 37.5 per cent. Thus, the quarters were progressively more difficult to cure when they occurred in cows with a greater number of infected quarters.

When the proportion of cows cured is considered as a criterion of the efficacy of therapy instead of the proportion of quar-

TABLE 1—The Efficacy of a Single Dose of 50,000 Units of Penicillin in 10, 100, or 500 cc. of Distilled Water as an Intramammary Infusion for Elimination of Streptococcus Infection

No. quar. infected	Vol. diluent for penicillin	Dry cows			Lactating cows		
		No. q.	No. freed	% freed	No. q.	No. freed	% freed
1	10	1	0		14	9	64.3
	100	0	0		20	14	70.0
	500	2	2		12	10	83.3
	Totals	3	2	66.1	46	33	71.7
2	10	2	2		16	8	50
	100	2	2		26	11	42.3
	500	2	2		28	22	78.6
	Totals	6	6	100.0	70	41	58.6
3	10	6	5		33	19	57.6
	100	0	0		24	10	41.7
	500	3	0		33	10	30.3
	Totals	9	5	55.5	90	39	43.3
4	10	0	0		28	9	32.1
	100	8	6		20	11	55
	500	4	1		16	4	25
	Totals	12	7	58.3	64	24	37.5
Totals for each volume	10	9	7		91	45	49.4
	100	10	8		90	46	51.1
	500	11	5		89	46	51.7
Grand totals		30	20	66.7	270	137	50.74

ters, the importance of the number of infected quarters per cow is very striking. Table 2 gives the efficacy of the single dose treatment in complete elimination of udder infection from cows infected in one, two, three, or four quarters. Only 7 of 46 cows infected in three or four quarters were completely cured.

TABLE 2—Effect of the Number of Quarters Infected on the Proportion of Cows Freed of Streptococcus Infection by One Dose of 50,000 Units of Penicillin

No. q. infected	No. dry cows treated	Freed	%	No. lactating cows treated	Freed	%
1	3	2	66.7	46	33	71.7
2	3	3	100	35	13	37.1
3	3	1	33.3	30	6	20
4	3	0	0	16	1	6.3
Totals	12	6	50	127	53	41.7

The single dose of 50,000 units of penicillin eliminated the infection from 157 of 300 quarters treated with varying amount of diluent. This efficacy (52.33%) is similar to previous results already reported.

DISCUSSION

The volume of distilled water has been studied as one of the factors affecting the efficacy of penicillin on streptococcic infection of the udder. From the results reported, differences in the volume of distilled water used as a diluent appeared to have no effect on the results of treatment and, therefore, the volume used should be one that can be transported and manipulated in an efficient and aseptic manner. Ten cc. is suggested as a standard diluent since the 100,000-unit vial of penicillin sodium can be readily divided into two 10-cc. doses after introducing 20 cc. of water into the vial.

The number of quarters infected is an important criterion for the veterinarian to aid him in deciding whether a cow should be treated. When cows are infected in three or four quarters, the owner should be advised that a complete cure is unlikely with penicillin therapy. However, cows with clinical mastitis are often improved by penicillin therapy even if no bacteriologic cure results, and this fact must also be considered in making a decision on which cows in a herd are to be treated.

SUMMARY

The efficacy of a single treatment with 50,000 units of penicillin in 10-cc., 100-cc., or 500-cc. volumes of sterile distilled water for streptococcic infection of the bovine udder was determined by treatment of 300 quarters.

There was no significant difference in the recovery rate of lactating quarters by any of the three volumes of diluent used. A single dose of 50,000 units of penicillin freed approximately 52 per cent of the 300 quarters treated. When the number of infected quarters per cow increased, the efficacy of treatment with a constant amount of penicillin decreased regardless of the volume employed.

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Satisfactory treatment of chick paralysis (neurolymphomatosis, infectious paralysis of Marek, coccidiosis, botulism, and other intoxications) with vitamins B and E has been reported. These agents were used as a preventive in the feed with brewer's yeast and greens.—*Ann. de Méd. Vét. (Belgium), 86, (1942): 129.*

DDT is highly toxic to cats, because they lick it.

Arsenic Content in Urine from Cattle Dipped in Arsenical Solutions

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BECAUSE arsenic was found in the urine of several cattle that died after being dipped in an arsenical bath in the Puerto Rico tick-eradication campaign, the claim was made that death was due to arsenical poisoning. Failure to find any reference in available literature on the amount of arsenic excreted in the urine of animals dipped in an arsenical bath prompted the following experiments during April and May, 1946. The experiments were inaugurated by veterinarians, Edward E. Maas and Lowell R. Barnes, of the BAI force stationed in San Juan, P. R. The urinalyses were made by Chemist William Gil Pabon through the facilities of the U. S. Army Antilles Medical Laboratory at San Juan, under the supervision of Capt. Henry R. Stiff, Capt. Parker R. Beamer, and Lt. Seymour Advocate of the chemistry section.

In order to ascertain the normal arsenic content in urine of cattle in that country, specimens of urine were collected from 4 grade dairy cattle which had not been dipped or treated with arsenical solutions for more than a year. These specimens contained 0.03, 0.03, 0.01, and 0.01 mg. of arsenic per liter of urine, respectively, an average of 0.02 mg. per liter of urine.

Four other grade dairy cows were selected for the next experiment. These cows had been dipped every fourteen days, beginning about Jan. 9, 1946, in arsenical solutions made from a commercial, concentrated arsenical dip, permitted in official dipping. The animals were dipped in solutions containing from 0.18 to 0.19 per cent arsenous oxide, as determined by the officially accepted starch and aqueous iodine field test. Some of these field tests for arsenical content of dipping solutions were verified by laboratory tests.

The first samples of urine from the 4 cows were obtained on April 18, 1946, on the fourteenth day after dipping, and analyses of these specimens revealed 0.23, 0.07, 0.27, and 0.23 (av. 0.2) mg. of arsenic per liter. Two of these same 4 cows were then dipped in an arsenical solution testing 0.22 per cent of arsenous oxide, and specimens of urine were collected twenty-four hours after dipping. The urinalyses from these 2 cows revealed 3.2 and 8.0 mg. of arsenic per liter of urine, respectively. The other 2 cows were dipped in an arsenical solution testing 0.185 arsenous oxide content, and urine specimens collected twenty-four hours after dipping revealed 2.8 and 8.8 mg. per liter of urine, respectively. Samples of urine collected from these same 4 animals forty-eight hours after dipping (2 dipped in a 0.22% solution of arsenous oxide and 2 in a solution testing 0.185%) revealed 4.0, 4.8, 4.0, and 4.0 mg., respectively, or an average of 4.2 mg. of arsenic per liter.

Analyses of urine specimens collected eighty hours after dipping from these same 4 cows revealed on analysis 4.0 4.4, 3.0, and 4.2 (av. 3.95) mg. of arsenic per liter. The arsenical content of the urine of these 4 cows, 2 of which were dipped in solution testing 0.22 and 2 dipped in solution testing 0.185 per cent arsenous oxide content, revealed approximately the same arsenical content on the forty-eighth and eightieth hours after dipping. The weather during the foregoing experiments was clear; that is, no rainfall was registered from the time the cattle were dipped to the time urine was collected.

For the third experiment, 2 head of grade dairy cattle were selected. They had been dipped every fourteen days beginning Jan. 9, 1946, in solutions testing 0.18 to 0.19 per cent arsenous oxide. These animals were dipped in a 0.22 per cent arsenous oxide solution on the fourteenth day after the previous dipping. Urine samples from these animals were collected on April 20, 1946, which was eighty hours after dipping. The urinalyses of these 2 cattle revealed only 2.6 and 1.6 mg. of

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arsenic per liter. These were exposed to several showers of rain from the time of testing to the time the urine samples were collected.

Samples of another cow from a different location revealed 4.0 mg. per liter. This animal was exposed to only a very light rainfall.

According to our observations, none of the animals used in the experiments evidenced any symptoms of arsenical poisoning. All of the dairy cattle used continued regular milk production. Report of additional experiments is as follows:

1) Urine samples were collected from a grade Holstein-Friesian which had been dipped in an officially tested arsenical solution testing 0.22 per cent arsenous oxide. This animal had not been dipped systematically for more than a year. About four hours after dipping, it was loaded on a small sloop for shipment and was *en route* for about eighteen hours, not having access to drinking water or feed during this period. As nearly as could be ascertained, this animal received no water from the time of dipping to the time the urine sample was collected shortly after arrival, or about twenty-four hours after dipping. It was certain that no water or feed had been ingested during the last eighteen hours prior to the collection of the urine sample, the analysis of which revealed 25 mg. of arsenic per liter. The animal evidenced none of the characteristic symptoms of arsenical poisoning. However, some slight desquamation of the skin of the udder region was noticed. The animal was placed in a pasture without medicinal treatment of any kind for about a week and then slaughtered. At the time of slaughter, the animal seemed to be normal.

2) Four grade Holstein-Friesian cows, which had not been systematically dipped previously, were dipped in the official arsenical solution and were loaded and transported in a small sloop four or five hours after dipping. They were *en route* about twenty hours, during which time they did not have access to water or feed. Samples of urine were collected at the time the cows were unloaded, which was about twenty-five hours after dipping. The analyses of these samples revealed 28.0, 40.0, 60.0, and 46.0 (av. 43.5) mg. of arsenic per liter. These animals evidenced none of the characteristic symptoms of arsenical poisoning. However, some slight desquamation of tissues in the regions of the udder, vulva, and anus were noted. They were placed in a dairy herd having access to water and pasture and were fed concentrated dairy feed. They received no medicinal treatment, and were producing a normal supply of milk on the third day after arrival.

3) In another shipment, 4 grade Holstein-Friesian cows were selected. These cattle had not been dipped systematically in arsenical solution for at least a year prior to shipment. They were dipped in an official solution testing 0.20 per cent arsenous oxide about four hours prior to loading on a small sloop. They were *en route* about eighteen hours, and were deprived of feed and water from the time of dipping until arrival at destination. Upon arrival, they were placed on pasture and were exposed for two days to heavy rainfall, totaling about 2 inches. Urine specimens were collected from these animals approximately eighty hours after dipping and exposure to the rainfall. The analyses revealed 1.6, 0.3, 2.4, and 2.0 (av. 1.5) mg. of arsenic per liter.

The urine used in the foregoing experiments was collected from natural voidings and by catheterization. Most of the specimens were preserved by using one part of 95 per cent alcohol to two parts of urine. The Gutzeit method was employed for determining arsenic content in the urine.

SUMMARY

1) Cattle which are dipped systematically (every fourteen days) in official strength solutions containing 0.18 to 0.22 per cent arsenous oxide, under normal conditions, eliminate arsenic in the urine for as long as fourteen days after dipping.

2) Cattle dipped in such arsenical solutions revealed, on the forty-eighth and eightieth hours after normal dippings, a uniform arsenical content in the urine.

3) Cattle deprived of water after dipping eliminated a relatively high percentage of arsenic through the urine, especially twenty-five to thirty hours after dipping.

4) Cattle exposed to rainfall after dipping, especially the first two or three days, demonstrated comparatively small amounts of arsenic in the urine on the eightieth hour after dipping.

5) The effect of absorption of arsenic in normal official dippings was not found to be detrimental to an animal's health.

6) The medicinal value of arsenic through absorption by cattle dipped in official arsenical solutions should be studied, especially in the diseases of anaplasmosis and piroplasmosis. This would be in addition to the insecticidal value in the control and eradication of ticks and other insect vectors of these two diseases.

Chemotherapy in anaplasmosis is deceptive. Supposed cures are but changes of the infection to the latent form, according to *Etudes de les Piroplasmoses Bovines*, of the Pasteur Institute of Algeria, which reports extensive trials of more than thirty years.

Enzoötic Paralysis of Calves of Undetermined Origin

This report concerns an enzoötic outbreak of "infantile paralysis" of calves that responded to potassium chlorate. The enzoötic occurred on a large estate (la Borderie) in the Department of Charante, France. It is described by Dr. Dindinard, director of the veterinary service of that Department in *Recueil de Médecine Vétérinaire*, July, 1940—a wartime number received late in 1946.

The first case was a previously healthy, 4-month-old heifer calf, stricken while suckling. She suddenly detached herself from her mother and fell to the ground after a few steps and then rose with difficulty, with tongue protruding several centimeters, dry muzzle, slight ptyalism, soiled lips, and dysphagia. Examination revealed no labial or buccal lesion to account for these symptoms. This initial clinical tableau was repeated by each of the other calves stricken, and in each case they were followed by a lasting anterior and posterior paralysis beginning about the fourth day and evolving slowly without loss of sensation—a true picture of anterior poliomyelitis. All cases were precisely the same: attack sudden and evolution of the paralysis slow (eight to fifteen days). The syndrome resembled that of Landry's paralysis, except that only the young were affected.

The cause was not determined. Forage poisoning and dietary deficiency were ruled out. Contagion was suspected.

A remarkable feature of the experience was the curative action of potassium chlorate. No matter at what stage it was given, improvement was marked. The dose eventually adopted was 1.2 Gm. per kilogram of live weight. Weights varied from 100 to 200 kg. (220 to 440 lb.). Sixty Gm. in a liter of water (2 oz. per qt.) were given by the glassful as often as every two hours. A control calf lingered in a bad state and relapsed in a month, while treated cases began to recover about the second day after the medication was started and, on recovery, remained in good health.

Resort to potassium chlorate was based on a certain published report of its use in infantile paralysis. Methenamine and antipoliomyelitis serum of Petit were fruitless.

[Although based more on clinical conjecture than scientific proof, the use of potassium chlorate was once popular in human and veterinary medicine in acute inflammations of the upper air passages. However, its use has been practically discarded because it was heralded for antiseptic properties it does not possess. The remote action claimed for it was never clear—no more clear than its alleged dynamics in these paralyzed calves—yet drugs which held a fixed place in medical practice for long periods are apt to stage a comeback in rôles least expected; for example, curare and colchicine, the local use of aloes, and the one-time popularity of urine for wounds now used in the treatment as urea. Who knows what any anion normally contained in the body is capable of doing medicinally in the right place?—*Ed.*]

The Brazilian correspondent of the *Journal of the American Medical Association* reports important responses to local applications of tyrothricin to the lesions of blastomycoses (paracoccidioidomycosis). Owing to its toxic and hemolytic action, its use internally is forbidden.

Thiourea

Thiourea, or its cousin thiouracil, is urea with the oxygen atom replaced by sulfur. It has the definite action of inhibiting the function of the thyroid gland or, more accurately stated, of preventing the thyroid from utilizing the intake of iodine to form the hormone thyroxin. It has gained prominence in human medicine by relieving the grave hyperthyroidism commonly known as exophthalmic goiter. The use of this sensational drug in veterinary medicine is clouded by the unexpressed functions of the thyroid in animals. Animal pathologists have yet to identify a clinical hyperthyroidism or hypothyroidism other than that associated with a known disease. An example is perosis or slip tendon of the chicken—a manganese deficiency—which has been experimentally produced by blocking production of thyroxin with thiouracil;* in other words, by disturbing mineral metabolism. The experimentally produced perosis was not relieved by adding manganese and other agents to the doses of thiouracil.

*Briggs, G. M. and Lillie, R. J.: Perosis Produced by Feeding High Levels of Thiouracil. Proc. Soc. Exptl. Biol. and Med., *61*, (1946): 430-432.

Canicola Fever (=Leptospirosis)

A case of leptospirosis in a man, 44 years old, reported by Rosenbaum in *Archives of Internal Medicine* (Chicago) was traced to the fondling of a dog. The dog had been severely ill for two months when the patient was hospitalized. The serums of both the patient and his dog agglutinated *Leptospira canicola* up to a dilution of 1 : 100,000 and *Leptospira icterohemorrhagiae* up to 1 : 1,000. The patient voided the organism repeatedly in his urine.—*Abstr. J. Am. M. A., 133, (Feb. 22, 1947): 571.*

Poultry-House Bedbugs

In testing the virtue of DDT against poultry-house bedbugs, Kulash (*Poult. Sci., 26,* (Jan., 1947): 44-46) found that one application of 5 per cent of the drug in kerosene completely removed the bedbugs (*Cimex lectularius*) from four poultry houses that had been heavily infested for fifteen years.

The author points out that the Mexican bedbug (*Haemotosiphon inodora*) is a common pest of poultry houses in the southwestern states, that it has been found as far east as Florida, and that reports of its spread northward may be expected. Moreover, the more ubiquitous bedbug (*C. lectularius*), though less frequent than the Mexican genus, is a common pest of the hen house. Both had been found difficult to exterminate.

Butchers' Dermatitis

This condition may be called swine, cattle, or sheep itch, and, more recently, chicken itch. It is an occupational disease of butchers who work in meat packing plants or who handle freshly killed carcasses, and of veterinarians engaged in meat inspection work.

It is characterized by erythematous areas accompanied by formation of pinhead vesicles and followed by eruptions, with intense itching. Moderate to marked swelling may accompany the condition. Dermatitis of this type commonly begins as an itching of the webs between the fingers. In about two days, vesicles appear, and these rupture in another day or two, exuding a clear, serous fluid which sets up more itching. Later, it spreads to the sides and backs of the hands and fingers, to the wrists, and even to the elbows. After eruption, the skin hardens and forms scabs or crusts which peel, and the newly formed skin again hardens. Only exceptionally is the condition found on other parts of the body.

This itching is not due to Ascaris sensitization, nor to contact with other parasites, but to handling of the viscera of freshly killed meat food animals. It appears to be worse among persons who handle the carcasses while still warm, and particularly among those who handle the warm viscera. It also may occur from contact with horses, or horse saliva (*see* JOURNAL, June, 1945, p. 367).

There is a period of sensitization, three days being the shortest time after exposure that itching has been reported, and thirty days the longest. After a single attack, some persons apparently develop a resistance or tolerance, while others suffer from repeated or continuous attacks for months, weeks, and even years. Some, who develop a tolerance from constant contact, will suffer a recurrence after a vacation; others never have it after they have once recovered.

The multiplicity of treatments recommended indicate that no one agent is effective under all conditions. There is no cure by treatment of the ailment during exposure, but frequent washing in cold running water relieves, whereas washing in warm water aggravates, the itching. Rinsing the affected areas in vinegar or lemon juice also relieves the discomfort. Zinc oxide ointment, vaseline, lard, glycerin, hand lotions, and mercuric bichloride ointment have been favorably reported by some affected persons; and yet each of these has proved unsuccessful to others. — *Benjamin Schwartz: Butcher's Dermatitis. J. Indust. Hyg., 13, (Sept., 1931): 233.*

An all-time record price was paid for a sheep when a Border-Leicester ram brought $4,800 at the Kelso ram sale in Britain. The previous top price was $4,400 in 1920.

Biological warfare is not a new military maneuver. It is recorded that in the French and Indian Wars (1762) smallpox was intentionally spread among the Indian tribes of Ohio.

Grisein, New Antibiotic

Grisein, the new antibiotic that may be able to "run interference" for streptomycin, was discovered by Dr. Selman A. Waksman, the discoverer of streptomycin. He believes that its greatest potential value lies in combining it with streptomycin to eliminate resistance which germs develop against this agent.

According to *Science News Letter* (Feb. 8, 1947), Waksman's new germ fighter is no rival to streptomycin because, by itself, it does not appear to be a direct weapon against disease organisms.

Flavonols as Antagonists of Dicoumarol

The flavonols — rutin, quercitrin, and quercetin, listed in order of effectiveness— are capable of neutralizing the bacteriostatic action of dicoumarol. This discovery, made by USDA workers and reported in *Science* (Jan. 31, 1947), may prove of veterinary interest in connection with sweet clover poisoning.

Dicoumarol possesses bacteriostatic action toward certain bacteria that is not antagonized by vitamin K. It, therefore, apparently exerts its bacteriostatic activity through a mechanism different from that by which it induces hypoprothrombinemia and hemorrhage.

This trial gave the first evidence of the antibiotic action of flavonols and suggests their use to antagonize the hemorrhagic action of dicoumarol *in vivo*.

Enter DDT, Exeunt Horn Fly and Others

Were the ersatz DDT of World War II to destroy the horn fly (*Haematobia irritans*) as completely as it does certain other insects, it would save the American cattlemen a lot of money—some $3 to $5 million every year, according to the economic entomologists—not only of Texas and Oklahoma, as one is apt to suppose, but all the way from Quebec to the Rio Grande. As a cattle pest, the horn fly has no equal (Hermes) which, to say the least, is quite a reputation to have earned in a short time. It came to New Jersey from somewhere in 1887, and then quickly took residence all over the country. In 1893, *H. irritans* under the name of *Lyperosia irritans* L. was already pestering cattle in the San Joaquin Valley and a few years later (1897) it appeared in the Hawaiian Islands. For quick colonization, this immigrant holds the record.

The horn fly (so named for its fiendish delectation to shelter itself where it can't be easily molested) stings, stabs, and sticks, keeps whole herds off the pasture in daytime, sucks up a lot of bovine blood, coöperates with the screw-worm fly, and causes pain and distress that can't be expressed in dollars and cents. The humane society bent on the prevention of cruelty to livestock, along with the pathologist, provisioner, and economist, ought to put the horn fly problem at the top of its agenda. Temporizing with the depredations of this devitalizing ectoparasite has too long escaped the humanistic movements against suffering animals. Its pointed stiletto, its stinging and blood-sucking habits, and its countless swarms on the given animal are too well known in veterinary practice to be dwelt upon here.

The horn fly menace in the small farm areas fluctuates with methods of manure disposal since, on pasture ground, the horn fly eggs hatch best in lumps of moist manure where they are laid, such as the droppings of cattle or improperly scattered stable manure. The fly thrives best on range pastures during warm and humid weather where the dragging of droppings to destroy hatching places is impracticable.

W. G. Bruce, associate entomologist, USDA (*Keeping Livestock Healthy*, 1942), writes with considerable optimism on control measures through the use of several measures described, among which are (1) breaking up droppings, (2) scattering stable manure to dry it, (3) sprayings of pyrethrum and kerosene, and (4) decontaminating infested animals with the cattle-fly-trap designed by the Bureau of Entomology (*q.v.*). The horn flies on the cattle passed through the trap are mechanically brushed off and caught. Needless to add that recontamination where the flies are breeding in countless numbers is but a matter of days, despite the thoroughness of each treatment. The daily internal administration of rotenone (0.4 Gm. per 100 lb. of body weight) reduces the number of larvae in the droppings, and the same is said of daily doses of zinc oxide (1.5 Gm. per 100 lb.) Neither was harmful to the cattle treated.

Germ Resistance to Repeated Antibiotic Contact

Fear that penicillin, streptomycin, and other antibiotic remedies will sooner or later become useless is somewhat allayed by studies carried on at The Ohio State University (*Sci. News Letter*, Nov. 9, 1946); if germs become resistant to penicillin or other antibiotic agents through repeated contacts in the patient's body, a switch to another member of the antibiotic group will be effective, notwithstanding the germs' resistance to the one first used.

In the Ohio studies, strains of *Staphylococcus aureus* and *Escherichia coli* were made penicillin-resistant by exposure to increasing concentrations of the drug. Then the resistant strains were subjected to various concentrations of streptomycin, in the presence of which they were nonresistant.

Tuberculosis Eradication in Man.—The epidemiology of human tuberculosis as well as its epizoötiology in livestock is mostly a matter of case-finding in both instances. The difference is that when the case is found in animals it is forever removed from the picture, whereas, in the former, the case and the case-finder, as a rule, are but starting an unmanageable relationship when the diagnosis has been made.

Arsenic Poisoning from Dips and Sprays

The widespread popularity of arsenic dips to control ticks, the use of sodium arsenate as food bait for locusts, and the irresponsibility of those who handle these poisons contribute to the high incidence of arsenic poisoning in livestock. To find a suitable antidote, studies were made with ferric hydroxide and sodium hyposulfite at the Veterinary Research Laboratories in Kabete, Kenya.

First, the author tried ferric hydroxide, prepared by adding sodium bicarbonate to a solution of ferric chloride. It was given as a drench in 3 doses at 20-minute intervals, followed one hour later with a purgative. This treatment prevented death only when started five minutes after the experimental dose was administered.

Sodium hyposulfite, given orally in doses of 12 to 24 Gm. and intravenously in doses of 2 to 5.6 Gm., proved effective when repeated up to four times at varying intervals. Death was prevented in animals weighing 190 to 613 lb. when the treatment was commenced within twelve hours after administration of the arsenic.

For these experimental studies, the arsenic was given as As_2O_3 at the rate of 0.4 Gm. per 100 lb. of body weight.— *J. Comp. Path. & Therap., 56, (Oct., 1946): 237-245.*

Prevention of Laboratory-Acquired Infection.—Accidental infections acquired in laboratories where highly infective bacteria or viruses are studied may be due to inhalation of an aërosol of the infective agent. With this in mind, studies were made at Camp Detrick, Md., to find a suitable germicidal aërosol for use in laboratories.

Results of the experiment (*J. Exptl. Med., 85,* (Jan. 1, 1947): 65-75) show that triethylene glycol introduced as a vapor into a dynamic virus cloud has positive disinfectant action on air-borne virus particles. On the other hand, enough virus escaped the action of the disinfectant to induce infection in exposed mice. Meningopneumonitis and psittacosis viruses were used in the test.

Frick and Haney showed in 1943 that every dollar spent for veterinary service in Kansas brought a return of seven dollars.

Bird migration and contaminated straw in pottery shipments are ways by which foot-and-mouth disease might jump the highest quarantine fence.

At the beginning of 1947, there were 1,700 soil conservation districts in the U.S.A. When there are 6 million districts, the United States will be channeled for a brilliant future.

Treatment of Bovine Piroplasmosis.—R. L. Lewis, in *The Veterinary Record* (Nov. 30, 1946), suggests blood transfusion as a useful adjunct, though not a substitute for chemotherapy, in the therapy of bovine piroplasmosis when death from anemia is imminent.

Streptomycin in Syphilis

Rabbits experimentally inoculated with *Treponema pallidum* contained in testicular tissue (of rabbits) responded to streptomycin, in trials conducted by Dunham and Rake of the Squibb Institute of Medical Research (*J. Am. M. A.*, June 1, 1946: 403). The inoculations were made through patches of clipped skin, and the drug was administered intravenously within three days and repeated every four hours for four days. Untreated controls developed syphilitic lesions, while treated rabbits were cured with doses above 79,000 units of the drug. In veterinary medicine, the significance of this work is the prospect of curing the grave protozoan infections of animals when streptomycin becomes available.

The poultry industry is making marked improvement on the outward appearance of New York dressed poultry, but doesn't take a look to see what's wrong on the inside. Meanwhile, evisceration and inspection at the time of slaughter is slowly creeping in to bring poultry meat up to the sanitary standard of beef, pork, lamb, and so forth. When a book on the most eventful years of veterinary medicine is written, poultry evisceration will be one of the chapters.

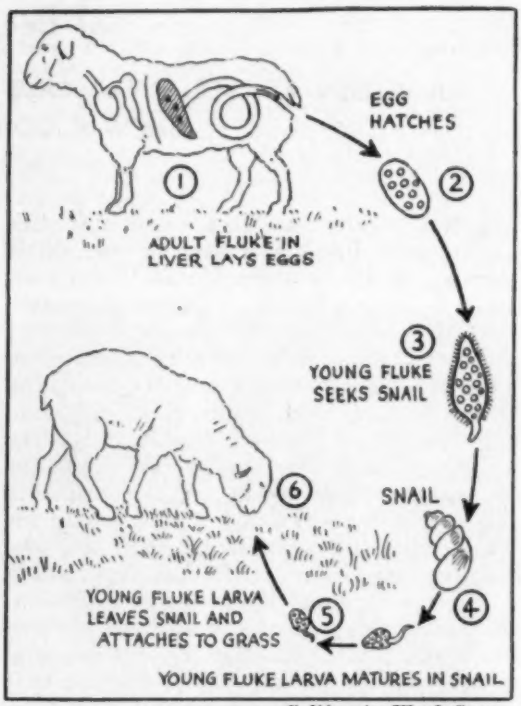
Fumes from burning smoke bombs and poisonous gas containers, destroyed in the hills of Scotland, caused so much sickness and abortion that the area had to be cleared of livestock.—*Vet. Rec., London.*

Workers of the Vanderbilt School of Medicine described a mold, identified as a strain of *Aspergillus flavus*, that inhibits *Mycobacterium tuberculosis*, *Staphylococcus aureus*, and *Escherichia coli in vitro* when grown in peptone-lactose mediums.

Intravenous administration of 250 cc. of a 2.5 per cent solution of sodium citrate brought surprising recovery in 5 registered Shorthorn cows treated for lead poisoning by Dr. Q. C. Dobbins, Bedford, Ind. — *Haver-Glover Mess., (May-June, 1946).*

Liver Fluke Control in Sheep

In planning a program for controlling liver flukes, the time of treatment should be chosen so as to take advantage of the weakest point in the life cycle of the fluke (see illustration). In general, they are most



—*California Wool Grower*

Graphic illustration of the life cycle of the liver fluke.

vulnerable in spring and fall, when the greatest number of adult flukes will be found in the bile ducts, according to Dr. O. Wilford Olsen, Angleton, Texas.

A program of drenching sheep twice a year will not eradicate liver flukes, but will greatly reduce their numbers and improve the health of the animals. It can be done conveniently just before the sheep are put on the pasture in the spring and just after they are removed in the fall. Such a program not only kills the greatest number of flukes, but also reduces the possibility of infection of more snails on the pasture during the next grazing season.

Complete directions for making hexachlorethane-bentonite water suspension, and for calculating the dosage needed, are given in the *American Journal of Veterinary Research*, July, 1946.

NUTRITION

Telangiectasis, "Sawdust," and Abscesses in the Livers of Beef Cattle

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TELANGIECTASIS, "sawdust," and abscesses are common diseases of liver in beef cattle throughout the western states. Telangiectasis is a condition of liver characterized by a single or multiple dark red foci throughout the parenchyma, resulting from vascular congestion and hemorrhage in the foci (fig. 2). Each focus is 1 to 2 mm. in diameter, occasionally larger. It may be generalized throughout the organ or localized. Generalized telangiectasis is reason for condemnation as unsuitable for human food. The cause has not been determined definitely. Histopathologic study of a large series of livers containing telangiectasis leads two of the authors (Jensen and Cross) to think that the fundamental change is necrosis of hepatic cells, and that congestion and hemorrhage follow.

Sawdust is a meat inspector's term and refers to a condition of liver characterized by single or multiple gray colored foci, each 1 to 2 mm. in diameter (fig. 3). The cause is not known. It may be generalized throughout the entire organ or localized. Generalized sawdust is reason for condemning liver as unsuitable for human food. Histopathologic study of a large series of livers containing sawdust leads two of the authors (Jensen and Cross) to think that the fundamental cellular change is necrosis of hepatic cells and infiltration of leucocytes. According to this interpretation, telangiectasis and sawdust are fundamentally the same. The two lesions commonly are concurrent in the same area of a liver.

Fig. 1—Ulcer in rumen.

Abscesses in liver are similar to abscesses in other organs. They occur as single and multiple lesions (fig. 4). A single abscess is reason for condemnation as unsuitable for human food. Telangiectasis, sawdust, and abscesses commonly occur together.

In the United States, approximately 5 per cent of beef livers are condemned at slaughter because of abscesses,[1] constituting a loss of $2,000,000 annually. In addition, some animals die because of multiple abscesses of the liver, but the mortality is low. Of 165 Herefords in one herd that came to the attention of the authors, 2 died from this disease. The influence of abscesses on rate of gain is not known.

Presented before the Section on Sanitary Science and Food Hygiene, Eighty-third Annual Meeting, American Veterinary Medical Association, Aug. 18-22, 1946.

Scientific Series Paper No. 220, Colorado Agricultural Experiment Station.

From the pathology section (Jensen and Cross), the chemistry section (Frey), and the animal investigations section (Connell), Colorado Agricultural Experiment Station, Fort Collins, Colo.

LITERATURE

According to the Livestock Loss Prevention Board,[1] the regional incidence of abscesses, telangiectasis, and sawdust is highest in the western states. Table 1 shows the average percentage of livers condemned because of abscesses at the various meat-packing centers under federal inspection for 1942-1945.

TABLE 1—Regional Incidence of Abscesses, Average 1942-45

Denver	12%
Los Angeles	10%
San Francisco	10%
Omaha	7%
Chicago	4%
United States	5%

In the western states, the annual condemnation for abscesses, telangiectasis, and sawdust varied for the years 1942-1945. Changes in the percentage condemned for telangiectasis and sawdust paralleled changes in percentage condemned for abscesses. This suggests a relationship of abscesses to telangiectasis and sawdust.

Several investigations have been conducted, both in the United States and abroad, to determine the bacterial flora of liver abscesses in beef cattle. Nearly all concur that the predominating species is *Actinomyces necrophorus*. Newsom[2] studied 100 abscessed livers collected at slaughter. Eighty-five contained a pure culture of *A. necrophorus;* 14 contained *A. necrophorus* and some other contaminating organisms; and one liver contained no *A. necrophorus*. Yamamoto[3] isolated *A. necrophorus* from abscessed livers in Japan. Predisposing factors, if necessary, are not known. Smith[4] studied the relationship of ulcers in the rumen to abscesses in the liver. He examined livers and rumens from 1,807 beef cattle at slaughter, 322 of which showed liver abscesses. Of the animals with liver abscesses, 62 per cent also showed rumen ulcers. Of the 1,807 animals examined, 1,485 contained healthy livers; of these, 18 per cent showed ulcers in the rumens. Smith's data showed some relationship between abscesses of the liver and ulcers of the rumen.

THE PRESENT STUDY

In continuing the study of liver abscesses, it was considered of fundamental importance to determine when they develop. During the past year, the Colorado Agricultural Experiment Station has conducted two experiments having the following objectives: (1) determination of the approximate time that abscesses develop; and (2) determination of the relationship of abscesses to telangiectasis and sawdust.

MATERIALS AND METHODS

In experiment 1, a homogeneous group of fattening cattle was slaughtered in lots at intervals of approximately forty days. The first group was slaughtered at the time fattening began.

Experiment 1.—(*a*) Cattle.—One hundred twenty-five Hereford heifers, approximately 1 year of age, were purchased out of the Texas Panhandle. They were shipped to the Warren H. Monfort beef-feeding establishment, Greeley, Colo., where they were fattened. At the time fattening began and at intervals of approximately forty days thereafter, a sample of 25 animals selected at random was slaughtered. All viscera were examined carefully, and samples of liver were collected for subsequent study. Fattening began July 17, 1944, and continued for a maximum of 157 days.

b) Feed.—The ration was composed of ground yellow corn, wheat, linseed meal, corn silage, and chopped alfalfa. The proportion of these ingredients changed as fattening proceeded (table 2). Feed was made available to the animals morning and evening in large open containers located in the corral. Fresh water was available at all times. This ration

Fig. 2—Telangiectasis in cross section of liver.

and feeding practice are standard at the Monfort feeding establishment. Cattle fattened there show an average incidence of abscesses, telangiectasis, and sawdust for the region.

c) Corrals.—All cattle were maintained in the same fattening pen which had been used repeatedly, and recently, to fatten cattle that showed abscesses, telangiectasis, and sawdust at the time of slaughter. No inside shelter was provided. The pen was well drained, and sanitation was better than average for the region.

Experiment 2 duplicated experiment 1 with the exception that the cattle were steers of western origin and at the beginning of the experiment they were slightly heavier and older.

Experiment 2.—(*a*) Cattle.—One hundred twenty Hereford steers, approximately 18 months of age, were purchased from the North Park area of Colorado. As nursing calves, these animals were on the mountain range. During the winter following weaning, they were pastured and fed native grass hay and cottonseed cake. As yearlings, they grazed on the same

mountain range throughout the summer. In November, 1944, they were purchased for experimental feeding which was conducted at the Colorado Agricultural Experiment Station, Fort Collins.

These animals were divided into six lots of 20 animals each. Each lot constituted a single slaughter. Lots 2, 3, 4, 5, and 6 were made equal for weight, size, and quality. Lot 1 contained cattle for the initial slaughter made at the time fattening began, and it was not

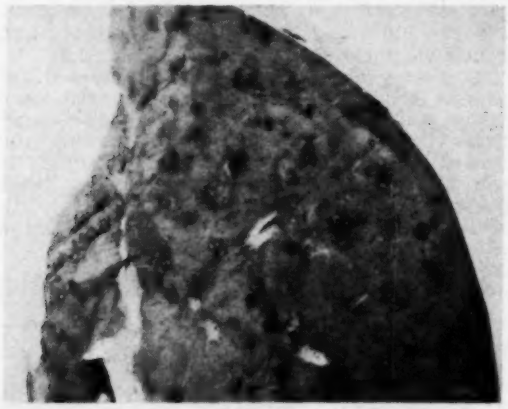

Fig. 3—"Sawdust" and telangiectasis in cross section of liver.

made equal to the other lots for weight, size, and quality. Average weight of the animals in lot 1 was slightly more than the average weight of animals in the other lots at the time the experiment began. Cattle in lots 2, 3, 4, and 5 were confined in a single pen and were fed a fattening ration. They were slaughtered as lots at intervals of approximately forty days. The lot of fattened cattle to be slaughtered at any one time was determined by random selection. Fattening began Nov. 9, 1944, and continued for a maximum of 167 days. Lot 6 served as a comparison of animals on a non-fattening ration with animals of the other lots on a fattening ration. The animals in this lot were confined in a separate pen and were fed a maintenance ration consisting of alfalfa and corn silage for the first thirty days. After this time, the silage was discontinued and the animals received alfalfa only. Ten animals of lot 6 were slaughtered after 120 days on feed and the balance at the end of the experiment. At the time of slaughter, all viscera were examined carefully. Samples of liver were collected for subsequent study.

b) Feed.—The fattening ration fed to the cattle in lots 2, 3, 4, and 5 consisted of ground yellow corn, wheat bran, cottonseed meal, corn silage, and chopped alfalfa. The proportion of ingredients changed throughout the fattening period (table 4). The animals were fed morning and evening and were given the quantity of feed they would consume (table 4). Fresh water was available at all times. Animals in lot 6 were fed alfalfa of fair quality morning and evening.

c) Corrals.—Lots 2, 3, 4, and 5 were maintained in one large pen newly constructed. However, manure from a pen recently occupied by cattle having liver abscesses was placed in the pen. Inside shelter with straw bedding was provided. Conditions were reasonably sanitary. Lot 6 was maintained in a separate pen where cattle having liver abscesses had been maintained previously.

Livers.—At the time of slaughter, all livers were examined carefully for abnormalities. The minimum amount of telangiectasis, or sawdust, considered positive was a moderate sprinkling through the liver or a heavy localized area. Livers having a few spots of telangiectasis, or sawdust, were considered normal. When a combination of telangiectasis

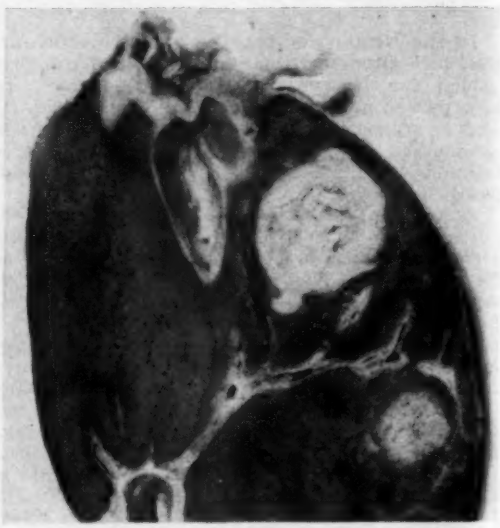

Fig. 4—Abscesses in cross section of liver.

and/or sawdust and/or abscesses occurred in a single liver, the liver was used in calculating the total percentage of each condition occurring in the combination. Samples of liver were collected for chemical analyses for content of vitamin A. These data are being presented in a separate paper.

Stomachs.—At the time of slaughter, each rumen, reticulum, omasum, and abomasum was examined for ulcers, ulcer scars, and foreign bodies. The entire intestinal tracts from approximately half of the experimental animals were opened longitudinally and examined for lesions.

RESULTS

Tables 2 and 4 show the average consumption of feed ingredients per head per day for experiments 1 and 2, respectively. Tables 3 and 5 give the condition of the livers at the time of slaughter. Rates of gain and the condition of the rumens are also indicated. In neither experiment were any metallic bodies found in the alimentary tracts. In experiment 2, small stones were

observed in the abomasum. These were like the gravel placed in the corrals at the beginning of the experiment. Abscesses occurred as single and multiple lesions. Livers were found to have varying quantities of telangiectasis. Sawdust also varied in amount. All three of these lesions occurred separately and in combination.

no time during the remainder of the fattening period do they regain the maximum rate of consumption of feed.

From table 3, it is seen that all livers were healthy at the beginning of the experiment. Telangiectasis developed early, to the extent of 36 per cent at the end of forty-one days on feed. A maximum of 52

TABLE 2. EXPERIMENT 1—Average Consumption of Feed Ingredients per Head per Day in Pounds

Date 1944	No. days on feed	Corn	Wheat	Linseed meal	Silage	Alfalfa
6/18-6/24	0	6.17	0.44		9.55	7.63
6/25-7/1		9.56	2.00		6.00	3.42
7/2-7/8		12.33	3.26	0.74	6.02	3.59
7/9-7/15		14.24	4.62	1.11	4.20	2.81
7/16-7/22		15.53	4.95	1.11	4.09	2.73
7/23-7/29		15.64	5.55	1.11	4.09	2.51
7/30-8/5	40	15.11	6.55	1.06	0.94	2.38
8/6-8/12		15.69	6.30	1.23		2.45
8/13-8/19		15.26	5.86	1.23		2.09
8/20-8/27	67	9.19	4.50	1.17	4.21	2.02
8/28-9/2		12.53	4.10	1.24	4.10	2.03
9/3-9/9	80	11.73	4.26	1.29	4.01	1.87
9/10-9/16		12.00	7.17*			1.90
9/17-9/23						
9/24-11/21		12.32	3.00	1.23		1.94

*Wheat plus barley.

DISCUSSION

Since the heifers used in experiment 1 contained healthy livers at the beginning of the experiment, the development and termination of telangiectasis, sawdust, and abscesses are shown clearly. In table 3, it is seen that abscesses were found first after eighty days on feed, at which time they had reached an incidence of 24 per cent. From table 2, it is seen that the maximum average daily consumption of concentrates occurred during the period forty to sixty days on feed. On the sixty-seventh day, the average daily consumption of concentrates was reduced by one-third, and at no subsequent time during the fattening period did the rate of consumption of concentrates reach the high level of the forty- to sixty-day period. It may be deduced that liver abscesses developed in many of the animals at approximately the sixty-seventh day, throwing them off feed and lowering the average quantity of concentrates consumed per head per day. The owner of the beef-feeding establishment where the heifers were fed fattens several thousand beef animals annually. According to his records, the cattle commonly reach maximum average daily consumption of concentrates at approximately the seventieth day of fattening, at which time they go off feed, and at

per cent was reached at eighty days on feed after which healing occurred. Sawdust followed the development of telangiectasis. Abscesses, in turn, followed the development of telangiectasis and sawdust.

Table 3 also shows that ulcer formation in the rumen preceded the development of abscesses and coincided with the development of telangiectasis. However, there was not a commensurate increase in abscesses following ulcers. In this experiment, the duration of the abscesses was approximately 120 days.

In experiment 2, 29 per cent of the animals contained liver abscesses at the beginning of the experiment. On the basis of the duration of abscesses in experiment 1, those found at the beginning of experiment 2 developed on the mountain range. Circumstances leading to their develop-

TABLE 3. EXPERIMENT 1—Summary of Data.

Lots	1	2	3	4	5
No. cattle	25	25	25	24	24
Av. weight	554	691	777	923	1,018
Days on feed	0	43	80	116	157
Telangiectasis %	0	36	52	8	8
"Sawdust" %	0	4	16	29	24
Abscesses %	0	0	24	37	8
Abscess scars %	0	0	0	0	42
Rumen ulcers %	0	8	4	4	0
Rumen ulcer scars %	12	0	4	21	4

ment could not be obtained. These steers ranged together with herd cows and suckling calves one year younger than themselves. Upon finding 29 per cent of the steers with liver abscesses, it was considered important to know if the suckling calves also had abscesses. To check this possibility, 17 calves were slaughtered. All had healthy livers. However, there is no necessary disagreement between data obtained from experiments 1 and 2. It may be that abscesses present at the beginning of experiment 2 were preceded by some degenerative condition, even telangiectasis.

Fig. 5—Abscesses developing in two localized areas of telangiectasis.

In the feedlot, the development of telangiectasis, sawdust, and abscesses followed the same general sequence as in experiment 1, with the exception that sawdust and the new crop of abscesses were first found at the same slaughter. Table 2 shows the average daily consumption of feed. Although not shown in the table, the animals were frequently off feed for short intervals.

From table 5, it is seen that telangiectasis developed to the extent of 10 per cent at the end of forty-one days on feed. At eighty days, the incidence had risen to 40 per cent, and declined only slightly by the end of the experiment. Sawdust formation followed the development of telangiectasis. The original abscesses began to heal early during the experiment. By summing the amount of active abscesses and abscess scars, it is seen that there was a marked increase in the total at 120 days and a still greater increase at 167 days. This indicates the development of a new crop of abscesses first seen after 120 days on feed. The new crop followed the formation of telangiectasis.

In the feedlot, rumen ulcers developed early. Abscesses developed subsequently but only after a lapse of considerable time. Commensurate increase in development of

TABLE 4. EXPERIMENT 2—Average Consumption of Feed Ingredients per Head per Day in Pounds

	Lots 2—5					Lot 6	
Date	Ground corn	Wheat bran	Cottonseed meal	Corn silage	Alfalfa	Alfalfa	Corn silage
11/9-11/19/44.....	3.15	0	1.07	8.05	14.17	24.32	7.80
11/19-11/29.....	9.50	0	1.20	6.08	6.25	11.20	11.35
11/29-12/9.....	10.94	0	1.50	5.94	6.59	11.30	4.60
12/9-12/19.....	12.58	0	1.26	5.14	4.29	17.26	3.00
12/19-12/20.....	13.98	0	1.00	4.18	5.06	17.26	0
12/20-12/30.....	13.90	0	1.00	5.09	4.99	17.26	0
12/30-1/9/45.....	15.00	1.00	1.00	5.03	4.63	17.26	0
1/9-1/19.....	15.00	1.00	1.00	5.07	5.42	17.26	0
1/19-1/25.....	16.50	1.00	1.00	4.72	4.67	17.26	0
1/25-2/4.....	15.67	0.95	0.93	5.00	3.82	17.26	0
2/4-2/14.....	16.89	0.99	0.99	4.00	3.70	17.26	0
2/14-2/24.....	16.63	0.95	0.95	2.99	3.64	17.26	0
2/24-3/6.....	17.10	0.95	0.95	3.00	3.44	17.26	0
3/6-3/8.....	18.00	1.00	1.00	3.00	3.46	17.26	0
3/8-3/18.....	17.10	1.00	0.95	3.00	3.80	17.26	0
3/18-3/28.....	18.20	1.00	1.00	3.00	2.90	17.26	0
3/28-4/7.....	19.00	1.00	1.00	3.00	2.98	17.26	0
4/7-4/17.....	17.90	0.94	0.94	2.50	2.52	17.26	0
4/17-4/25.....	17.25	0.91	0.91	1.75	2.25	17.26	0

abscesses did not follow the formation of ulcers.

In the feedlot in both experiments, telangiectasis developed early and abscesses later. This sequence suggests that telangiectasis predisposes liver tissue to abscesses. The formation of rumen ulcers always preceded, although not immediately, the development of abscesses.

It is realized that many pitfalls attend any attempt to construct a complete and accurate sequence of changes in tissues leading to abscesses from the meager information available. However, data from these experiments suggested the following pathogenesis: Telangiectasis developed first. Its cause is unknown. Histopathologically, it had the features of a hemorrhagic infarction. It is possible that the cause was occlusion of one or a group of sinusoids in a liver lobule, and the occlusion may have resulted from small emboli originating in ulcerative lesions in the mucosa of the alimentary tract. Grossly, it appears dark in color because of the presence of blood. That telangiectasis may heal is indicated in table 3. It may transform to sawdust by hemolysis of the erythrocytes and infiltration of leucocytes. As telangiectasis contains dead tissue, it is a favorable medium for *A. necrophorus* to produce abscesses. Ulcers may give *A. necrophorus* entrance to the liver *via* the portal system.

More fundamental investigations must be conducted to determine whether telangiectasis and sawdust predispose to abscesses.

TABLE 5, EXPERIMENT 2—Summary of Data

Lots	1	3	2	5	4	6	
No. cattle	21	19	20	19	20	10	10
Av. weight	676	801	914	1,061	1,138	841	868
Days on feed	0	41	77	120	167	120	167
Telangiectasis %	0	10	40	37	35	0	10
"Sawdust" %	0	0	0	5	15	0	0
Abscesses %	29	16	25	21	20	20	0
Abscess scars %	0	10	5	16	25	10	0
Total abscesses and scars %	29	26	30	37	45	30	0
Rumen ulcers %	0	63	30	37	15	0	0
Rumen ulcer scars %	0	5	10	47	55	0	10

SUMMARY AND CONCLUSIONS

Two beef-feeding experiments were conducted in which samples of the animals were slaughtered at the beginning of the experiments and at intervals of approximately forty days throughout the fattening period. The objectives were to determine: (1) the time that abscesses develop, and (2) the relation of abscesses to telangiectasis and sawdust. Several conclusions may be drawn.

1) Liver abscesses develop in significant numbers, both in the feedlot and on the range. In the feedlot, abscesses develop during the period from eighty to 120 days on feed.

2) Under conditions of fattening, telangiectasis develops early and abscesses form later.

The assistance and coöperation of Mr. Warren H. Monfort in experiment 1 is deeply appreciated. The meat packers of Denver, especially Swift & Co. and Armour and Co., coöperated and gave generous use of their facilities at the time of slaughter.

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Amino Acids

The use of synthetic amino acids is nutritionally uneconomical (*J. Nutr.*, June 10, 1946), judging by comparative trials. Mixtures of amino acids were prepared, using the amounts and proportions in which they occur in whole egg, yeast, cottonseed meal, corn germ flour, beefsteak, and haddock. None of the mixtures of amino acids was as efficient as the protein it was compared with, the biological value being reduced 10 to 40 per cent.

Colostrum and Its Value in Calf Raising

The composition of colostrum and its function in the nutrition of the newborn has been the subject of many investigations. Difficulties in raising young without the benefits of colostrum are well known, and many of its special nutritive characteristics have been known for years. Yet, throughout the nation, literally tons of this highly nutritious feed is either wasted or used in such a way that its maximum nutritional benefits are not obtained.

Within recent years, this subject has again been the object of intensive study. Attempts to raise calves from birth on skimmilk and the rather promiscuous use of vitamin supplements for calfhood ailments have focused attention on the nutritive value of colostrum.

The high protein content of colostrum is due to an extremely high amount of globulin. It has been known for some time that this globulin is similar to, if not identical with, blood globulin, that important protein fraction which carries the protective antibodies. Recent investigations have shown that the blood of the newborn calf is strikingly low in gamma globulin. Because of the high intake from colostrum feeding and the fact that the digestive tract of the newborn animal is permeable to globulin, the amount in the blood quickly rises following colostrum feeding. When skimmilk is fed, the globulin content of the blood remains low for a considerable length of time.

The newborn calf also has practically no vitamin A reserves. Colostrum is exceptionally well supplied with this vitamin. The amount is highest in the first colostrum drawn following parturition and rapidly falls with successive milkings. The vitamin A of the calf's blood rapidly increases following colostrum feeding. When the colostrum not fed to the newborn calf is saved and used to replace whole milk or skimmilk in the raising of calves, several advantages have been noted: (1) The level of vitamin A in the blood of the calves is maintained at a higher level. (2) The calves make better gains. (3) The physical appearance of the calves is noticeably superior.

Contrary to popular opinion, feeding colostrum does not cause looseness or scours. We have changed abruptly from the feeding of whole milk to the feeding of colostrum without experiencing the slightest trouble.

When calves have digestive disturbances, the amount of vitamin A in the blood falls rapidly. This probably results from both an increase in the requirement and a failure to absorb vitamin A from the digestive tract. The administration of vitamin A at such times is indicated. A favorable response, however, does not necessarily justify the conclusion that a deficiency of the vitamin was the primary cause of the trouble.

Factors affecting the amount of vitamin A in colostrum are being studied. Our data indicate that the colostrum of first-calf heifers is more potent than that from cows in later lactations. The carotene intake of the cow has an effect on the potency of the colostrum but not as great an effect under normal conditions as might be expected. The length of the dry period has an important effect. In general, the longer the dry period the more potent the colostrum.

Colostrum is also an important source of riboflavin (vitamin B_2). Our data show that on the average riboflavin is about 3.4 times as concentrated in the first colostrum as it is in normal milk. The significance of this high riboflavin intake in the nutrition of the newborn calf is not fully known at present.—*T. S. Sutton, Ph.D., professor of Animal Husbandry, The Ohio State University, Columbus.*

Presented before the Fourth General Session, Eighty-third Annual Meeting, American Veterinary Medical Association, Boston, Mass., Aug. 18-22, 1946.

Vitamin A During Gestation

In a comprehensive study on supplementing the ration of pregnant cows with vitamin A, Fevrier *et al.* (abstr. *Encyclopédique Vétérinaire Périodique, 3*, 1946: 250) reported experiences showing the necessity of furnishing stabled cows on winter rations with feed rich in carotene or supplemented with vitamin A, in order to insure not only the health of the cow but to provide the essential constitution of the colostrum for the benefit of the newborn calf. However, the supplementation did not influence the vitamin A values of the cow's milk. Only feeds rich in carotene (good hay in measured amounts) accomplished that desideratum. That is, vitamin A *per se* enriches the colostrum but not the subsequent milk.

Cardiac Failure in Cattle

Sudden deaths of experimental cattle fed vitamin E free rations are of record. Deaths occurred in both sexes, at ages from 1.5 to 5 years. Though the cause was not detected on gross postmortem study, the suddenness of death suggested heart involvement.

Gullickson and Calverley, of the Minnesota experiment station (*Sci., 104,* (Oct. 4, 1946) : 312-313), made electrocardiographic recordings of test cattle maintained on vitamin E free diets from birth. One of these, a heifer, dying suddenly about five months after the electrocardiogram studies were started, showed definite cardiac abnormalities. In the terminal stages of the deficiency, the recordings disclosed decreased functional activity of the myocardium, dissociation of atrial and ventricular impulses, and possibly damage to the conducting nerves. There also was a change in the electrical axis of the heart as the deficiency progressed. Her sire and dam, which had been raised on vitamin E free diets, died earlier in the same manner.

Microscopic studies of heart sections from this heifer and other cattle in the experiment showed atrophy and sclerosis of the myocardium. An increase in cellular elements, to some extent resembling the Aschoff nodules of human endocarditis, was also evident.

The Fall and the Spring Pasture.—Overestimating the nutritive value of fall pastures, lush as the autumnal rain can make them, is one of the causes of lowered milk production, says Dr. E. A. Woelffer in *The Milkpail.* Spring grass and fall grass are galactagogues of different dynamic values. The fall pasture is a deceiver. It never starts cows on a milk-producing spree.

Glutamic Acid.—The largest market that exists for a single amino acid is undoubtedly that for glutamic acid. The relatively pure monosodium salt of glutamic acid has been used in the Orient for about thirty years as a meat flavor and provides a considerable industry there. In the past decade, glutamic acid has been widely used in the United States.—*S. W. Fox in Sci. Monthly, Feb., 1947.*

Nutrition Notes

Convulsions in calves are more common when they are left in a dark place. Irradiated yeast and more sunlight help to prevent the condition. — *Dr. E. L. Dicke, Louisburg, Kan.*

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The theory has been advanced that failure of estrus is wholly or partially due to concomitant inanition, not to a thiamin deficiency, *per se.* This inanition is reflected as failure of the pituitary gland to produce sufficient gonadotropic substance rather than to ovarian failure or to loss of sensitivity of the vaginal epithelium.—*From Nutrition Reviews, March, 1946.*

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Bassett, Harris, Smith, and Yoeman of the U. S. Wildlife Service, U. S. Fur Farm Experiment Station, Saratoga Springs, N. Y., coöperating with the Laboratory of Animal Nutrition, Cornell University (*The National Fur News,* July, 1946), connected vitamin A deficiency with the formation of urinary calculi in foxes and mink. In 70 experimental animals, autopsy studies showed renal and cystic lithiasis, enteritis, and pyelitis in the vitamin-A-deficient, and no lesions in the controls.

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When laboratory animals are well provided with vitamin B, they have no trace of creatin in their urine, but in four or five days of avitaminosis B, creatinuria occurs sporadically among the subjects and is definitely established in ten to fifteen days in all of them. The relationship between avitaminosis B and creatinuria was proved by disappearance of creatin from the urine twenty-four hours after a complete diet was fed.—*Abstract from Encyclopédie Vétérinaire Périodique.*

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Fritz, Halpin, and Hooper, Borden's Nutritional Research Laboratory, Elgin, Ill., report that while 26 per cent protein was required for fastest growth of poults, good results were obtained from 20 per cent, even when the protein was of vegetable origin. Of the total ration, a calcium intake of 2.0 to 2.5 per cent and of phosphorus 1.0 per cent, was suggested to insure a sufficiency of vitamin D. Higher levels of minerals tended to depress growth, and lower levels increased the requirement of vitamin D.

EDITORIAL

Concentration of Veterinarians in Ten Countries

The table below was compiled for the value it may have in arousing interest in the world's veterinary service, the history of which should be a part of veterinary education. The countries are listed on a descending scale in the order of the ratio of veterinarians to populations. The figures are prewar and in round numbers.

Country	Veterinarians Number	Area Mi.²	Approximate Populations	Veterinarians per 100 M.
Hungary	1,240	35,875	8,600,000	14.4
Germany	8,500	213,029	70,000,000	12.1
Italy	3,900	119,713	41,000,000	9.5
Czechoslovakia	1,390	140,394	14,700,000	9.4
United States	12,000	3,026,789	140,000,000	8.6
France	3,500	212,659	42,000,000	8.3
Poland	2,500	139,083	30,000,000	8.3
Jugoslavia	850	248,665	13,700,000	6.2
Roumania	1,050	122,282	17,200,000	6.1
Gr. Britain	2,310	86,510	45,000,000	5.1
Totals	37,240	4,344,999	422,200,000	8.8

In face of the lack of curiosity about the stature of veterinary service beyond the immediate horizon, it is not astonishing that domestic animal medicine is everywhere a grey chapter of world knowledge. There is probably no subject as little discussed in veterinary groups — including colleges and associations—as the world's veterinary service as a whole. In times like these, such illiteracy begins to loom as a flaw in fundamental veterinary training. For instance, we find ourselves facing an animal-disease crisis in Mexico in lamentable ignorance of veterinary education and service there and in the South American countries. Moreover, UNRRA has sought, in vain, for essential information about veterinary schools and services in the archives of veterinary medicine, and UNESCO no doubt will do likewise. Meanwhile, Leclainche's *History of Veterinary Medicine* (1934) and other books of its kind stand unread and untaught on the shelves of many libraries.

In the past, committees on veterinary education and state examining boards have not collected facts essential in their line of duty. Facts about foreign veterinary schools and the quality of their graduates are as men from Mars when they apply for recognition.* In his booklet on *Veterinary Education in Europe* (1938) (*see* the JOURNAL, February, 1947, p. 133), Professor Bressou points out that knowledge of one another's educational systems and services is famously incomplete, indicating that we of the U.S.A. are not the only sluggards. As a matter of fact (and to universal discredit), information about the folks "next door" is a beautiful blank.

How many and what sort of veterinary schools a country supports, what kind of public functionaries administer them, and under what and whom the educated veterinarian labors in public and private service is important information that could go into the veterinary student's notebook in a few hours of college time. Yet, it appears that nowhere in the world of today have the course planners been stirred to do so.

*A subcommittee of the AVMA Council on Education is now making a survey of foreign veterinary colleges for the purpose of evaluating their curriculums and the training of their graduates, in comparison with accredited veterinary colleges in the United States and Canada. The survey will reflect the conditions brought about by World War II in some of the European schools and will serve as a guide in passing upon the qualifications of foreign veterinary graduates who wish to emigrate to the United States.

The penalty is the public's lack of knowledge of the essentiality of domestic animal medicine. We can't expect the people to know what we do not.

Compare this with the chairs of history in the medical colleges and the volumes that have been written on the history of medicine. In passing, one takes notice of the long, fascinating series of articles on the history of the AMA now appearing in the journal of that association.

The preceding table is but a pattern to which additional columns should be added on number and value of animals, number of colleges and students, entrance requirements, length of courses, and so on.

Secrets of the Thyroid in Farm Animals

Most of the functions of the thyroid gland were known before the turn of the nineteenth century. But, because thyroid-depressing and thyroid-accelerating agents were not available, research in farm animals was limited. Studies of the human thyroid, however, were evaluated, especially since the accelerator, thyroprotein, and the depressors, thiourea and thiouracil, were provided. The recent widely publicized reports on thyroid therapy in livestock are, therefore, not as spontaneous as might be supposed.

These thyroid products must be used with caution because the tolerance of animals for them (their short and long range effects) are still too vague to place them among tried-and-true therapeutic agents.

Reineke, of Michigan State College, after trials in animals, warns (*M.S.C. Vet.*, Fall, 1946) that feeding synthetic thyroprotein must be watched closely to avoid overstimulation. Excessive doses—1.5 to 2.5 Gm. of synthetic thyroprotein per 100 lb. of body weight, daily—in cows caused a sharp increase in production of milk and its fat, but the increase was accompanied by a rise of body temperature and pulse rate and severe loss of weight. On the contrary, 0.6 to 1.0 Gm. per cwt., fed for five months, gave favorable results without untoward effect on the temperature and pulse; and the slight loss of weight at the beginning was soon regained. For unknown reasons, moderate dosing increased milk secretion in a few cows, while it did not in others. Moreover, large doses given for several months sometimes caused loss of weight, depressed normal milk secretion, and lowered heart action.

Throughout, the most constant change observed was the increase in the butterfat percentage. Thyroprotein also produced changes in the milk protein, particularly apparent in cows affected with clinical mastitis. There was a decline in the ascorbic acid content of the milk; there was no evidence that the milk of thyroid-treated cows would be harmful to children or adults.

All things considered, hypothyroidism in farm animals appears to exist undetected. As Reineke points out, it has not been sufficiently studied to justify conclusions as to its effect on infertility, although it invigorates bulls and steps up spermatogenesis of rams in hot weather, when thyroid activity is lowest. It is quite generally believed that the hormones of the thyroid are essential to normal reproduction in the female. Notwithstanding the lack of scientific proof, it has been long suspected that hypothyroidism accounts for irregular estrus and heat periods.

The decline of egg production in hot weather has been overcome by feeding chickens 10 Gm. of thyroprotein per 100 lb. of mash. Besides, on this regimen, chickens gained weight and feathered out better. Thyroid-treated hogs showed better body development and gains than the untreated controls. Whether these benefits are derived from direct action, through stimulation of the pituitary gland or other interaction, remains to be determined.

There is less importance to attach now to the thyroid-depressing agents—thiourea and thiouracil—in the absence of present knowledge of hyperthyroidism (toxic goiter) in farm animals. Andrews (*J. Anim. Sci.*, Feb., 1947) saw the rate of growth decline in lambs fed 0.048 to 0.071 Gm. of thiourea daily, but Beeson *et al.* (*ibid.*) reported that 2 to 4 Gm. of thiouracil per head increased gains, the dressing percentage, and the finish in steers, on less feed. Van der Noot (*ibid.*) obtained 27 per cent more gains in hogs, on less feed, by adding thiouracil, a sensation in the feeding of farm animals, in view of what that means in world affairs. No less significant is the physiopathology laid bare by the demonstrable dynamics of thiouracil and thyroprotein.

James H. Spence—1866-1947

Besides genuine sorrow to a host of admiring colleagues and countrymen whom he served professionally for more than half a century, the death of Dr. J. H. Spence (ONT '90) at his home in Clinton, Iowa, on February 21, 1947, removed one of the molders and builders of clinical veterinary

Dr. James H. Spence

medicine in the Middlewest, by means of ethics and work that never betrayed the spirit of professional life. Born at Granton, Ontario, in 1866 and graduating in 1890, he was one of many who were tempted to answer the call of the growing livestock industry of Iowa which, like the rest of the country, had been floundering along, catch-as-catch-can, without competent medical attention. Dr. Spence's name will be inscribed in veterinary history as one of the pioneer graduates who laid the foundation for the kind of veterinary service the American people now have.

When he settled in Iowa in the early '90's, its veterinarians were sparse and its need of them great. Off hand, one recalls Stalker, Gibson, Statter, Chandler, Quin, and Spence, as the advance guard of the legion that was to see Iowa become the center of the world's commissary. What these competent professionals have meant to the development of the U.S.A. must be left for the future to bless and extoll. We live too close to their achievements to index their value as a whole, much less the personal contributions they made, like those of Dr. Spence whose sturdy character, skillful work, admirable public relations, and steadfast devotion to organization are too easily overlooked in our struggle for existence to attach the importance belonging to them. Yet, in the sum of these, not the fanfare of a few, lies the security of the profession.

The deceased is survived by his widow, *née* Josephine Hall, whom he married on March 8, 1894, which month and day in 1944 was marked by a sumptuous celebration of their golden wedding anniversary at their home in Clinton. The two familiar faces will be missed at AVMA meetings.

"Render . . . Unto Caesar . . ."

The production on America's 6 million farms was one-third greater in the 1942-1944 wartime period than in the prewar, four-year period of 1935-1939 and, without notable exception, the credit is given to the farm tractor and improved machinery. The vast tonnage moved from the farms is a matter of record and so is the fact that it was produced under a shortage of labor. The mounting number of tractors and the decreasing numbers of horses and mules is held by some to be the enabling factor, exclusively. These three years of high production are pointed out as the birthtime of large farms and the doom of the smaller ones. Anyhow, the pattern of our future agriculture is being cut out on the basis of these abundant years.

But, is the whole truth being weighed? Need we not reckon with better fertilization (and less robbing) of land, better control of plant and animal diseases (pest and plague control), better plants (oats, corn, wheat, soybeans, *et al.*), more milk per cow, more eggs per hen, lower pig and chick mortality? And don't forget that the blessed weather conditions of 1942-1944 were 10 per cent above the average. These are so many factors to measure and to weigh before pinning all the blue ribbons on machinery, which may actually be taking agriculture "for a ride".

Five American scientists received Nobel prize awards during 1946. Among them were Wendell M. Stanley and John H. Northrup of the Rockefeller Foundation—for work on viruses and enzymes.

"Stallion Road"—A Motion Picture About a Veterinarian

Veterinary medicine has been glamorized in a motion picture soon to be released by Warner Brothers. Ronald Reagan plays the lead as Dr. Larry Hanrahan, veterinarian and owner of Stallion Road Farm. Alexis Smith plays opposite him as Rory Teller, owner of Teller Farm which she operates with a younger sister, Chris.

The horses shown throughout the picture are well-bred and well-trained. The portrayal of the work and life of the veterinarian is on the glamorous side, but highly complimentary. The play is exceptionally well cast. Much of the credit for proper portrayal of the veterinarian, and for the careful handling of the animals, is due to

—Warner Bros. photo

In the picture "Stallion Road", which depicts the ups and downs in the life of a veterinarian, Alexis Smith as Rory Teller and Ronald Reagan as Dr. Hanrahan appear astride a pair of jumpers.

The story revolves around the practice, in a horse country, of a veterinarian who gets himself misunderstood because a valuable jumping mare died on an afternoon when he was busy vaccinating a herd of cows in an attempt to avert a widespread outbreak of anthrax in the valley. Eventually anthrax, in atypical form, does get out of hand, threatening the entire horse population of the valley, until Dr. Hanrahan, by complete disregard for office hours, previous failures, and his own rest, perfects a "new" serum which is effective in saving the lives of many of the horses.

the expert supervision of Dr. Charles H. Reid, of Hollywood, who frequently watches these technical angles for the motion picture industry. Unfortunately, such credit is not accorded in the title footage of the picture.

Human interest and romance are injected into the picture by having Zachary Scott play the part of an author seeking local color for a new book, and Peggy Knudsen as the "other woman" in a double triangle. The picture, based on a book of the same name by Stephen Longstreet, will be released about the first of April.

CURRENT LITERATURE

ABSTRACTS

Hydatid Disease in Reindeer

Hydatid disease is endemic in the northern part of Sweden, and investigations have shown that Echinococcus cysts of the lung are not uncommon among the inhabitants. Some of the earlier cases found were among the nomadic Lapplanders. Reindeer may be the intermediate hosts. Examinations made at reindeer-slaughtering places showed that in certain herds as many as 10 per cent of the animals had hydatid cysts of the lungs. This disease is known to exist among reindeer in Norway, Sweden, Siberia, Alaska and, in all probability, in Finland, because the disease has been found in Finnish Lapplanders. It is thought that dogs become infested by eating offal, especially lungs from slaughtered reindeer. Reindeer may become infested by the ingestion of material contaminated with dog feces in the same manner that cattle do. The urine of dogs with the adult parasite may become mixed with Echinococcus ova from the feces-stained hair and may be spread on the snow by that means. Reindeer with salt hunger eat the urine-soaked snow and may thus obtain the ova.—[*Lars Soderhjelm: Hydatid Disease in Reindeer. Skand. Vet.-tidskr., 36, (June, 1946): 378-381.*]

ALFRED G. KARLSON

Newcastle Disease [Pneumoencephalitis]

In a series of five articles, the work is reported, which was done as a part of a research project conducted under the direction of a War Department Commission. The work, done by C. A. Brandly, H. E. Moses, E. L. Jungherr, E. Elizabeth Jones, and E. E. Tyzzer, at the Huntington Laboratory, Boston, Mass., covers epizoötiology, comparative pathology, isolation and identification of virus, immunization, transmission of antiviral activity, and congenital passive immunity to Newcastle disease of chickens.

It represents a complete textbook discussion of the history of this disease, as well as a discussion of the development of a new chicken embryo vaccine and the latest methods of using this new immunizing product.—[*C. A. Brandly, H. E. Moses, E. L. Jungherr, and E. E. Jones: Epizoötiology of Newcastle Disease of Poultry: 243-249; E. L. Jungherr, E. E. Tyzzer, C. A. Brandly, and H. E. Moses: The Comparative Pathology of Fowl Plague and Newcastle Disease: 250-288; C. A. Brandly, H. E. Moses, E. L. Jungherr, and E. E. Jones: Isolation and Identification of Newcastle Disease Virus: 289-306; C. A. Brandly, H. E. Moses, E. E. Jones, and E. L. Jungherr: Immunization of Chickens against Newcastle Disease: 307-332; C. A. Brandly, H. E. Moses, and E. L. Jungherr: Transmission of Antiviral Activity via the Egg and the Rôle of Congenital Passive Immunity to Newcastle Disease in Chickens: 333-342. Am. J. Vet. Res., 7, (July, 1946): 243-342.*]

Extragenital Lesions in Canine Pyometra

Besides the symptoms and blood picture of canine pyometra, there were extragenital, histopathologic changes in the parenchymal organs. In this connection, the kidneys, lungs, adrenals, spleen, liver, and lymph nodes were involved.

The most prominent lesion observed was myeloid metaplasia of the liver, spleen, kidneys, and adrenals. In addition, there were degenerative changes in the renal tubules, interstitial nephritis, congestion and moderate fatty metamorphosis of the liver, congestion and many megakaryocytes in the lungs, hyperplastic follicles in the lymph nodes, congestion, hemorrhage, or edema in the sinuses, thinning of the capsule and trabeculae of the spleen due to the presence of myeloid tissue, and atrophy of the Malpighian corpuscles. In 2 of the dogs, the medulla of the adrenal was completely hemorrhagic and the cortex necrotic.—[*F. Bloom: The Extragenital Lesions of Canine Pyometra. Cornell Vet., 36, (1946): 324-342.*]

Canine Hemophilia

Hemophilia was studied in the male members of a family of highly prized, purebred dogs, some of which suffered a series of unusual injuries. Hemophilic phenomena began at birth. Bleeding from the umbilical cord necessitated ligation in some cases. At 6 to 13 weeks old, the affected dogs developed unilateral or bilateral arthritis and lameness closely resembling rickets. Several developed large, hard, tumor-like masses in various regions of the body, and complete posterior paralysis. A number of them succumbed to uncontrollable hemorrhages from wounds or ruptured blood vessels sustained at play. One developed a large hematoma of the head and, in spite of surgical intervention, bled to death. The gums of one bled from normal dental eruption and it died. The authors established a diagnosis by applying accepted criteria, including Quick's test for hemophilia.

Genetic studies revealed that the hemophilia was due to an inherited, sex-linked, recessive gene, though it was pointed out that the condition can be inherited in different ways in different species and families. The owners took

steps to control the trouble by eliminating the recessive gene.

Self-elimination of the hemophilic males, absence of the unwanted gene in their normal brothers, and a breeding test for suspected females were the factors that aided in reducing the defect.—[*R. A. Field, C. G. Rickard, and F. B. Hutt: Hemophilia in a Family of Dogs. Cornell Vet., 36, (1946): 285-300.*]

Parasitic Gastritis in the Horse Due to Trichostrongylus

The nematodes called *Trichostrongylus axei* in the horse and *Trichostrongylus extenuatus* in ruminants are really the same parasite, and not separate species. It is a common parasite of sheep and cattle in Denmark, but no information was available concerning its importance in horses. The authors examined 100 horse stomachs obtained from the pathology and anatomy departments of the veterinary school in Copenhagen. *T. axei* was found in 36 of the 100 stomachs. Gastrophilus spp. were found in 75, Habronema spp. in 46, and *Ostertagia ostertagi* in 3 cases. Only eight stomachs were free of parasites. In practically all cases of *T. axei* infection, there was an accompanying gastritis, the extent of which varied in general with the number of parasites. The typical lesion consisted of circumscribed thickening of the mucosa. In light infections, there were isolated raised areas from pea to walnut size, but in the more severe cases they were diffuse. When the surface of the areas was gently scraped off, there were underlying erosions of the mucosa with a central, vivid red, depressed area surrounded by hypertrophic mucosa. When such portions of mucosa were placed in water, the parasites were seen with their anterior ends buried in the tissue. Histologically, there was desquamation, hyperemia, increase of connective tissue, a marked cellular infiltration composed of lymphocytes and plasma cells, and occasionally some eosinophils. Sections of parasites and ova were often seen in the mucosa or in the crypts, but never beneath the epithelium. It is pointed out that horses may serve as a source of infection for *Trichostrongylus equi* in sheep and cattle and vice versa.—[*Hans Roth and N. O. Christenson: On Parasitic Gastritis in the Horse Due to Trichostrongylus. Skand. Vet.-tidskr., 43, (July, 1942): 488-515.*]

ALFRED G. KARLSON

Botulism in Horses

The grave toxemia of horses due to *Clostridium botulinus* is characterized mainly by neuroparalytic phenomena generating from the lumbar centers, whereas in man the debut is the central origins of the cranial nerves. The trouble in horses is always afebrile, whether acute, subacute, or chronic. In the more acute cases, the subject is not able to stand and dies of inspiratory paralysis in a few hours. Less acute cases live two to six days and exhibit troubles of prehension, mastication, and deglutition. The chronic cases sometimes recover slowly in several months, showing posterior weakness with difficulty in rising. As the autopsy is negative, botulism is but a suspicion, unconfirmed. Prophylactic vaccination is rendered difficult by the existence of several types of botulinus organisms.—[*R. Williams: Equine Botulism in Belgium. Ann. Méd. Vét., 88, 1942. Abstr. Rec. Méd. Vét., 122, (Oct., 1946): 458.*]

Local Meat Inspection

Because veterinarians are frequently called upon to help organize and direct municipal meat-inspection services, it is important that they keep informed on current practices and trends in that field.

To this end, federal inspectors are always willing to help and to advise local organizations in regard to inspection techniques and operating procedures.

The author gives a comprehensive list of the obligations and problems that confront the administrators of a municipal inspection service, with emphasis on antemortem and postmortem inspection.—[*G. W. Riley: Municipal Meat Inspection. Auburn Vet., 2, (Summer, 1946): 113-115 and 126-128.*]

"Round Heart Disease" in Poultry

A disease of poultry, reported from Northern Ireland, is marked by an abnormal change in the contour of the heart. It was named "round heart disease." Chickens 3 to 7 months of age are particularly susceptible. The mortality is high. In 36 outbreaks studied, an almost uniform feature was sudden death. Birds were found dead under the perch or seen to topple over in the run. Most of the cases were pullets, but a few cockerels were stricken.

The greatest number of deaths occurred at feeding time. The birds approached the feed bucket on the run, then suddenly keeled over, dead. This instantaneous factor has led owners to suspect poisoning, since the birds seemed healthy up to the time they were stricken. In only one outbreak were prodromal symptoms noted: dullness and disinclination to move for about two hours before death.

The trouble is no respecter of breed. It prevails for three or four months and then disappears, although it has occurred on the same farm in successive years. Daily losses seldom exceed 2 birds in any one flock, but the average flock loss in an outbreak is 15 per cent. In some flocks, the loss may reach 50 per cent, or more. Inasmuch as all reported cases occurred between June and November, a seasonal factor may be involved. The incidence of "round heart disease" has not been correlated with any other disease; in fact, it seems to be a separate and previously unrecognized entity.

The most striking fact about this malady was that there were extensive macroscopic changes in the heart muscle, yet the birds showed no preliminary symptoms of circulatory embarrassment. The heart was enlarged and the muscle bluish pink and spongy. The typical tapering contour of the organ was lost. The ventricles had a rounded outline, and sometimes the apex was invaginated. The superficial ves-

sels were markedly congested, and in some cases the organ was encased in a yellowish, jelly-like clot. Usually, there was an excess of pericardial fluid as well as of abdominal fluid, and in some cases there was edema of the lungs. Frequently, the liver was congested or pale, and slight involvement of other organs was inconstant.—[*D. Luke: "Round Heart Disease" in Poultry. Vet. J., 103, (Jan., 1947): 17-20.*]

Anthrax Spores in Vapors

Evidence was obtained that viable spores of *Bacillus anthracis* may escape into the atmosphere when spore suspensions in sterile distilled water are heated in open containers, and that viable spores may occur in the distillate from anthrax spore suspensions.—[*C. D. Stein and Herbert Rogers: Recovery of Viable Anthrax Spores from Vapors of Heated Anthrax Spore Suspensions and from the Distillate from Anthrax Spore Suspensions. Am. J. Vet. Res., 7, (Oct., 1946): 481-485.*]

Bovine Trichomoniasis Vaccination

Intramuscular and intravenous injections of living *Trichomonas foetus* were made into 30 virgin heifers. When used at the rate of twice a week for 16 injections, with concentrations of 25 million to 250 million Protozoa per injection, 9 out of 10 heifers were temporarily protected against artificial infection, while all control animals not vaccinated became infected to some degree. Smaller doses and fewer injections reduced the degree of protection conferred.

The conclusion is reached that although temporary immunity may result after a long series of injections, the vaccination of heifers is ineffective for protecting breeding females and cannot be recommended as a practical procedure.—[*Banner Bill Morgan: Vaccination Studies on Bovine Trichomoniasis. Am. J. Vet. Res., 8, (Jan., 1947): 54-56.*]

Seroprophylaxis and Serovaccination in Leptospirosis of Calves

Leptospirosis has been observed to recur after two or three years in formerly infected areas, —evidence for a persistent source of infection in the vicinity—and has led to the search for a means of specific prophylaxis.

A vaccine was prepared by adding 0.3 per cent formalin to cultures of Leptospira isolated locally from infected calves and lambs and grown in an aqueous sheep-serum medium. The serum was prepared by repeated hyperimmunization (with living organisms) of naturally infected and recovered steers. The serum had a microagglutination titer of 1:100,000.

Ninety-five calves were given 20 cc. of the serum subcutaneously on an infected collective farm of Pashakend village in Bayazet province. On the same day, before serum treatment, 3 calves died and 4 became sick with symptoms of leptospirosis. Leptospira were cultured from the blood of 1 of the sick calves. All 4 were cured with 50 cc. of the serum intravenously. Fifty calves were left untreated, and of these, 5 died of leptospirosis in the next few days. Of the serum-treated calves, none were affected until the twenty-first day, when 2 died. This is the expected duration of passive immunity.

The serovaccination method was tested on a collective farm in Akhtin province, where the calf crop of 1944 became affected in the summer of that year. Three sick calves were successfully treated with the serum. The remaining 60 calves were divided into two groups. One group received 20 cc. of serum and 10 cc. of formol vaccine subcutaneously. The other group received only serum. On the eighteenth day, 3 calves from the single-treatment group showed icterus. They were cured with 50-cc. doses of serum intravenously. In the double treatment group, no cases were observed in a ten-month period.—[*Docent V. S. Gazaryan: Seroprophylaxis and Serovaccination in Leptospirosis of Calves. Veterinariya, 7, (July, 1946): 24.*]

ROBERT E. HABEL.

Mastitis Due to Yeastlike Fungi

Ten instances of infection of the bovine udder by yeastlike fungi were observed during a six-year period in a herd of about 120 purebred Guernsey and Holstein-Friesian cows. In each case, only one quarter was involved.

There was swelling of the affected quarter, marked reduction in milk production, rise in body temperature and pulse rate, and macroscopic abnormality of the secretion. The infection was known to be present for from six to forty-eight days, and the secretion from the affected quarter was macroscopically abnormal for three to twelve days. Recovery was spontaneous.

The causative organisms formed mycelium, blastospores, and oidia. They belong to the genus Trichosporon and the family Mycotoruloideae.—[*James M. Murphy and Charles H. Drake: Infection of the Bovine Udder with Yeastlike Fungi. Am. J. Vet. Res., 8, (Jan., 1947): 43-51.*]

Bovine Pyelonephritis

The wide variations which exist between individual cases of infectious bovine pyelonephritis are undoubtedly traceable, in part at least, to the location of the causative agent, *Corynebacterium renale*. In the milder cases studied, the microörganisms were present in the cellular débris of the kidney calyces, the ureter, and the bladder mucosa. In more severe cases, foci of infection were scattered throughout the kidney. In the characteristic lesion, the diphtheroids were seen in cellular débris which was flanked by a zone of necrosis and, outside of that, a zone showing chronic inflammatory changes.—[*E. S. Feenstra and F. Thorp: Bacteriopathology of Infectious Bovine Pyelonephritis. Am. J. Vet. Res., 7, (Oct., 1946): 432-436.*]

A Survey of Literature from Holland

[The following is a continuation (see February JOURNAL, *p. 130) of a survey of the Tijdschrift voor Diergeneeskunde during the war years. Dr. Chas. Haasjes, Shelby, Mich., prepared the abstracts.—The Editors.]*

Pox in a Jackdaw.—A case of pox in a tame jackdaw (*Colaeus monedula*) was shown by Jac Jansen [69, (Feb. 15, 1942): 128-131] to be caused by the virus of canarypox. Fowl, pigeons, and canaries were susceptible; vaccination with fowlpox or pigeonpox virus failed to produce immunity against the jackdaw strain. Cross immunity between the canary and the jackdaw virus was demonstrated.

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Neutral Borogluconate.—For subcutaneous injection of calcium borogluconate, a solution having a pH of 7.2 was found to be much less irritant than the common acid solution with a pH of 4.0 by L. Seekles, E. Havenga, and J. DeWael [69, (March 15, 1942): 179-193]. Methods of preparation were described.

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Milk Fever.—J. B. van der Meulen advances the theory [69, (April 1, 1942): 203-230] that, at about the time of parturition, there is a sudden rise in the demand for calcium to complete fetal development and to secrete milk for the calf. This demand is accompanied by a corresponding rise in the "suction power" which permits the skeleton to withdraw calcium from the blood. If there is a simultaneous inability to replenish the blood calcium by absorption from the intestinal tract, then the blood draws calcium from the nervous tissues, thus disturbing the calcium-magnesium balance of both the blood and the nerves (specifically a hypocalcemia and a hypermagnesemia) and resulting in narcosis or coma of milk fever, sometimes ushered in by tremors or tetany.

His theory regarding grass tetany or lactation tetany is that, following a month or more of milking, the magnesium supply of the body is low, so that when a reduction in calcium occurs it is accompanied by a hypomagnesemia; the combination of calcium and magnesium deficiency results in tetany, the depressing or narcotic effect of an excess of magnesium ions being absent.

The following steps are suggested as being helpful in preventing or avoiding milk fever and lactation tetany: (1) feed a high calcium ration during the last half of the lactation period, the drying off period of several months—not during the dry period; (2) feed a high calcium ration at the start of the new lactation period; (3) feed a high magnesium ration at the start of the new lactation period; and (4) avoid digestive disturbances.

The administration of ionizable calcium solutions is recommended for treatment, in order to reëstablish the calcium-magnesium balance. In tetany, both elements are needed. In narcosis or coma, only the calcium ions are needed because this condition is seen only when there is an excess of magnesium over calcium.

The author believes that: (1) the cow cannot store calcium in the skeletal tissues during the dry period, but that this storage must take place during the drying off period; (2) the osseous system exerts a "suction power" on the calcium content of the blood at the same time that maximum growth of the calf and a rapid increase in milk production are taking place; (3) a relative excess of magnesium is accumulated in all body tissues during the dry period; and (4) when hypocalcemia is present and the nervous tissues are starved for calcium there is interference with the calcium absorption mechanism to the extent that the deficient material cannot be assimilated from the intestinal tract.

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Milk Fever Theory.—The complex of symptoms shown by cows suffering from milk fever is believed to resemble, in all respects, the shock syndrome in man, particularly in shock which follows hemorrhage. At least, this is the belief of H. A. Zwynenberg [69, (April 15, 1942): 580-592].

Because of the vast amount of blood needed to maintain the abnormal secretory activity of the udder, there is a stasis of blood in the peripheral vessels. As a result of this stasis, the blood pressure falls, the pulse becomes weak and thready, and the flow of blood is very sluggish if not completely stopped.

Based on a critical study of all theories previously advanced, the author concludes that the chemical change in composition of the blood is caused by endocrine imbalance which, in turn, is caused by sluggish flow and insufficient supply of blood. In support of this theory, he reports that intravenous injection of sodium salicylate with caffeine (15 Gm. in 20 cc. of water) exerts an excellent stimulating effect on the ailing cow. He believes that the proximal cause of milk fever is not to be found in the chemical changes in the blood, but that these changes are another effect of the basic trouble. He also believes that the favorable response from udder inflation is due to mechanical pressure and closure of the peripheral capillaries of this gland, and the consequent forcing of more blood into the remaining vascular system.

Reports are listed of a number of patients which have recovered following subcutaneous, intramuscular, or intravenous injection of 500 to 750 cc. of physiologic saline solution. This response is explained as being due to an increased volume of fluid circulating in the blood vessels.

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Neurectomy in Lameness.—The application of the so-called operation of Leriche following the use of novocaine in veterinary surgery is discussed by J. Ojeman [69, (May 1, 1942): 297-304]. The elimination of side reactions and deviations resulting from taking the sympathetic nerve out of the picture is considered to be of particular value and interest in the treatment of lameness because, by this method, the lameness is corrected immediately.

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Staining Tubercle Bacilli.—A method of staining tubercle bacilli with a fluorescent substance called auramine is described by G. P.

Te Munnik [69, (May 15, 1942): 323-333]. As compared with the standard Ziehl-Neelsen acid-fast staining technique, it has some advantages: it takes much less time; it permits recognition of more positive cases; it is a simple procedure; and it is examined under a dry objective. The method also has some disadvantages: it must be used in a darkened room; it is more difficult to use because of its extreme sensivity; and it lacks permanence because the fluorescent power is of short duration.

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Puerperal Bacteremia.—The incidence of bacteremia accompanying acute puerperal disease of cows, mares, and sows, and its possible relation to examination (vaginal or rectal) and to dystochia, was studied by Wagenaar [69, (May 15, 1942): 338-345]. Of 33 cows examined, 3 yielded positive blood cultures and 5 others may have been slightly infected or contaminated. Of 5 mares examined, none yielded positive cultures although 3 showed unmistakable evidence of sepsis. Of 8 sows examined, 2 were suffering from bacteremia found following cesarean section.

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Duck Pest.—An outbreak of duck pest which affected a number of adjoining duck farms is reported by A. Bos [69, (June 1, 1942): 372-378]. Losses up to 50 per cent were recorded. The disease is caused by a virus, and appears to be species specific since it was not possible to infect chickens, pigeons, rabbits, guinea pigs, rats, or mice. Birds that survived the outbreak were immune.

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Foot-and-Mouth Disease.—Milk from a dairy infected with foot-and-mouth disease was consumed raw by 47 persons. When tests were conducted by Jacob Jansen [69, (July 1, 1942): 612] it was found that virus of sufficient activity to kill a guinea pig in forty-eight hours was present in the feces of 1 of these persons. The virus was shown to be of the same type as that present in the milk.

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Dermatitis in the Cat.—It is postulated by J. G. Ojeman [69, (Aug. 1, 1942): 470-478] that the endogenous dermatitis of the neutered cat is caused by deficiency of vitamin A; this, in turn, is due to disturbed thyroid function following removal of the gonads. Large doses of vitamin A administered enterally and parenterally usually result in a favorable response. Vitamin A deficiency is also responsible for a number of skin ailments in the dog: disease of Perthes, and spondilitis deformans. At least, these conditions improve following its use.

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Virus Disease of Rabbits.—A fatal rabbit disease, caused by a virus, was studied by Jacob Jansen [69, (Sept. 1, 1942): 505-515] after it was found as a spontaneously occurring condition. Virus could be demonstrated in blood, urine, bile, and nasal mucus; and it could be successfully transferred to susceptible rabbits by many routes—subcutaneous, intracutaneous, intravenous, intranasal, conjunctival, and oral. Contact usually resulted in infection. Experimental infection usually resulted in death.

Leontiasis Ossea.—J. G. Ojeman describes leontiasis ossea as a diffuse sclerotic hypertrophy of the osseous structures of the facial part of the skull [69, (Sept. 1, 1942): 515-518]. It is questionable whether this is a primary condition or a variant of the fibrous osteodystrophy. It probably cannot be traced back to an origin in rickets or osteomalacia, as suggested by Marek.

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Veterinarians Needed.—The need for more veterinarians in order to permit the rendering of a complete veterinary service is stressed by G. Bergsma [69, (Nov. 1, 1942): 580-591] in a talk at a veterinary meeting in Utrecht in 1944. The position of the veterinarian in a program for the economical production of livestock and for the inspection of foods of animal origin is discussed.

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Udder Edema.—Most cases of udder edema respond favorably when the cow is milked four times daily, but in those cases which do not improve by the fourth or fifth day, the following surgical intervention is recommended by Ludwig [69, (Nov. 1, 1942): 601]. Place a scalpel through a new cork until the very sharp point emerges. Grasp the scalpel at or behind the cork, make 10 to 15 incisions not more than 1/2 cm. deep in the edematous udder. During the first hour, 2 qt. of the edematous fluid will flow, thereafter about 1 pt. each hour. In five days, the dripping ceases. Not a single case of untoward results has been observed.

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Dog Encephalitis.—A series of 159 dogs suffering from encephalitis were treated with 2-cc. injections of "pernaemon forte" by J. D. Verlinden and J. G. Ojeman [69, (Dec. 1, 1942): 608-614]. When injections were given intramuscularly on two successive days, 45 per cent of the distemper-complicated cases recovered, while 79 per cent of cases listed as idiopathic encephalitis recovered. Subcutaneous injection, of the same product yielded results no better than the usual symptomatic treatment.

A theory of the action of pernaemon forte on the central nervous system is advanced, but there is no indication as to the nature of this product.

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Orchitis in Stallions.—Three cases of orchitis in stallions are reported by the Department of Infectious Diseases [71, (Feb. 15, 1946): 160-167]. In each case, *Brucella abortus equi* was isolated from the extirpated glands. The animals all reacted to serum agglutination test, and the titer was being reduced after castrapletely negative. All stallions used for breeding purposes should be negative to a brucellosis blood test.

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Marie's Disease.—Six cases of Marie's disease are described by J. Winsser [71, (Feb. 15, 1946): 167-184], and a review of the literature is also presented. It was once believed that the condition was always associated with pulmonary tuberculosis, but such is not the case. In

man, it is usually characterized by drumstick fingers. Several theories regarding the onset of the disease and appearance of the lesions are discussed and compared.

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Fowl Cholera Outbreak.—C. F. G. W. Van der Hurk reports a widespread outbreak of fowl cholera which occurred in September, 1945, [71, (April 15, 1946): 361-362]. In most localities reporting the disease, it occurred simultaneously with the arrival of large flocks of wild ducks. It is presumed that these carried the infection because they died in vast numbers.

Fowl cholera is not common in Holland, for there have been many years during which not a single report of the disease was received. Additional information regarding prevalence of the infection among migrant wild ducks would be of interest and of value.

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Impotent Bulls.—A condition in which bulls are found to be impotent by virtue of inability to extend the penis by elimination of the sigmoid flexure is reported by Th. DeGroot and S. R. Numans [71, (May 1, 1946): 372-380]. An operation in which the retractor muscle is severed has been devised and used to correct this trouble, but it is advised that the operation be abandoned because the condition is apparently a simple recessive hereditary character and performing the operation simply perpetuates the condition. Instead of operating, the affected bull should be removed from service, as should his sire and dam.

Enterotoxemia in Lambs

An alum precipitated toxoid was prepared from *Clostridium perfringens*, type D. In field trials, this agent, when injected into 5-month-old lambs, produced a higher antitoxic titer than did a 5-cc. dose of antiserum. It apparently reduced losses due to enterotoxemia (pulpy kidney disease), and its use appeared to be a promising method for reducing losses where the condition had been prevalent among fattening lambs.—[*O. H. Muth and Don Rex Morrill: Control of Enterotoxemia (Pulpy Kidney Disease) in Lambs By the Use of Alum Precipitated Toxoid. Am. J. Vet. Res.*, 7, *(July, 1946): 355-357.*]

Filarial Dermatosis of Sheep

Filarial dermatosis of sheep, caused by *Elaeophora schneideri*, has been studied since 1933 and was identified in 1937. It was usually a circumscribed dermatitis involving the skin in the region of the poll, sometimes extending over the face to the nostrils and lips. Occasionally, the hind foot used to scratch the head had similar lesions and, in a few instances, lesions were found on the abdomen in the location where the affected foot came in repeated contact with the skin.

Anthiomaline and Fuadin were tested, and both antimony compounds showed distinct promise of bringing about uncomplicated recovery with single injections of large doses.—[*H. E. Kemper and I. H. Roberts: Treatment of Filarial Dermatosis of Sheep with Antimony Compounds. Am. J. Vet. Res.*, 7, *(July, 1946): 350-354.*]

Panleucopenia in Cats

The disease has been shown to follow a rather consistent clinical course. Early in the onset, there is a slight elevation of temperature, retarded appetite, and rapid loss of body fluid and flesh. Between the second and sixth day, the animal ceases to play, becomes depressed, and assumes a prone position. The temperature rises sharply and is often accompanied by vomiting. The disease can be accurately and easily diagnosed by the aid of blood counts, and the course may be accurately determined if daily temperature, leucocyte, and erythrocyte determinations are plotted and compared with a chart which accompanies the article. —[*Wayne H. Riser: The Behavior of the Peripheral Blood Elements in Panleucopenia (Agranulocytosis) of the Domestic Cat. Am. J. Vet. Res., 8, (Jan., 1947): 82-90.*]

Chemotherapy of Calf Pneumonia

This is the report of the first project completed under the guidance of the Research Council of the AVMA. Nearly 1,200 analyses of blood samples from 23 normal calves were made to establish the curves of average blood concentrations resulting from single oral doses of sulfathiazole, sulfapyridine, and sulfadiazine. All three were absorbed at about the same rate during the first four hours, but the rate varied with the age of the calf. Sulfapyridine and sulfadiazine reached about double the blood concentration as a similar dose of sulfathiazole; and a blood concentration of 1 mg. per 100 cc. of whole blood persisted two and a half times as long.

More than 1,200 analyses of blood samples from 27 different normal calves were made to establish the curves of average blood concentrations resulting from various dosage levels of sulfathiazole, sulfapyridine, sulfamerazine, and sulfanilamide administered for five successive days. There was dangerous accumulation of sulfapyridine and sulfanilamide, when administered for more than three days at dosages of 1.0 and 1.5 grains per pound of body weight, respectively.

Signs of toxicity accompanied by an accumulation of drug in the blood stream were: marked loss of appetite, depression, slight constipation, rough coat, and sunken eyeballs. Additional signs of advanced drug toxicity were hematuria, renal colic, oliguria or anuria, and peripheral neuritis in extreme sulfathiazole toxicity. A decrease in fluid consumption caused a marked increase in the blood concentration of sulfonamide.

Approximately 60 per cent of the administered drug was recovered in the urine during the first forty-nine hours after administration. —[*L. Meyer Jones: The Chemotherapy of Calf Pneumonia. I. Some Pharmacologic Aspects of Sulfonamide Administration to Normal Calves. Am. J. Vet. Res., 8, (Jan., 1947): 1-13.*]

Brucellosis in Swine

The infected boar is commonly an important reservoir of *Brucella suis*. Boars, even young, weanling boar pigs, are apparently susceptible to brucellosis either by natural or experimental exposure. Symptoms noted varied from a definite orchitis with decreased sexual desire to no visible manifestations.

Elimination of *Br. suis* in the semen was a constant finding in 6 of 8 naturally infected boars, so that the potential menace of such semen to other animals and to human health cannot be ignored.—[*L. M. Hutchings and F. N. Andrews: Studies on Brucellosis in Swine. III. Brucella Infection in the Boar. Am. J. Vet. Res., 7, (Oct., 1946): 379-384.*]

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The over-all semen quality of 6 Brucella-infected boars was inferior to that reported for 7 normal boars. Because of differences in technique used, only general comparisons can be made. Average semen volume was reduced, initial sperm motility was less, and breeding efficiency would indicate that semen quality may be subnormal in boars affected with brucellosis.—[*F. N. Andrews and L. M. Hutchings: Studies on Brucellosis in Swine. IV. Semen Quality in Brucella-Infected Boars. Am. J. Vet. Res., 7, (Oct., 1946): 385-387.*]

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Eight sows naturally infected with *Brucella suis* farrowed only 14 litters in a two-year period, although they were bred repeatedly to farrow two litters per year.

Two Brucella-infected boars returned to an effective breeding status following unilateral castration for the removal of an enlarged testis, but evidence is not yet available to indicate that such boars could be used safely for breeding disease-free sows.

Pigs raised from infected sows were either nonreactors at weaning time or became nonreactors within one month after weaning.—[*L. M. Hutchings, A. L. Delez, and C. R. Donham: Studies on Brucellosis in Swine. V. Reproduction Studies With Naturally Infected Sows and Boars. Am. J. Vet. Res., 7, (Oct., 1946): 388-394.*]

Do You Read?

The *Journal of Dairy Science*, official organ of the American Dairy Science Association, is published monthly at Lancaster, Pa. Its editor is Prof. T. S. Sutton, The Ohio State University. Send subscriptions to R. B. Stolz, *ibid.*, Columbus, Ohio. Price, $6.00.

Poultry Science, official journal of Poultry Science Association, is published bimonthly at Menasha, Wis. The editor is R. George Jaap, The Ohio State University, Columbus, Ohio, to whom correspondence should be directed. Price, $4.00 a year, $3.50 to members. The associate editors are F. R. Beaudette, New Brunswick, N. J.; W. W. Craven, Madison, Wis.; A. J. G. Maw, State College, Pa.; and E. S. Snyder, Guelph, Ont.

BOOKS AND REPORTS

Heads Up—Heels Down

Doctor, if you want to please a boy, girl, or grown up who's starting to ride a horse from scratch, give him a copy of this book. It is a primer on how to make that rare combination of *rider* and *horseman*—rare since the coming of the horseless carriages. As the author says, "If your riding and handling of horses begins and ends at the mounting block, you may become a rider but never a horseman." So he sets out to provide the novice with an interesting, illustrated manual, aiming to remove that common, but by no means universal, equestrian from the bridlepaths. Quoting *Veterinary Military History* (1935): "Good riders may be poor horsemen, and, strangely, most of them are. Major General Smith found them so in South Africa. We found them so in France." There you have a valid reason for starting the neo-rider to pleasurable ownership of a saddle horse.

There are chapters on (1) the anatomical lingo of the riding stable mapped on the façade of a horse of faultless conformation; (2) the popular saddles, bits, reins, and riggings; (3) grooming and care and the rider's raiment; (4) the seat and hands; (4) the gaits, with a classic treatment of jumping; (5) some hints on shoeing; and (6) ailments which ought to have been omitted or else brought down to date from the vintage of the nineteenth century, including the use of "veterinary" for "veterinarian" as the substantive for the horse's physician. Why horsemasters feel obligated to trek into veterinary science in their fine documentations of equine zoötechnics remains unanswered. When writing about the first aid treatment of the common ailments that befall a riding horse, the author is sound and sensible, characteristic of the other chapters, but when he refers to the cause and nature of spavin, ringbone, stringhalt, windpuffs, *et al.*, one is reminded of the pathology of the 1880's.—[*Heads up—Heels Down. A Handbook on Horsemanship and Riding. By C. W. Anderson. Excellently illustrated. 144 pages. The Macmillan Company, New York. 1944. Price $2.50.*]

Indiana Annual Meeting

A stenographic report of 166 mimeographed pages, which details all of the activities of the annual meeting of the Indiana Veterinary Medical Association held at Indianapolis, Jan. 9-11, 1946, is a commendable undertaking, effectively completed. It undoubtedly serves as an incentive toward maintenance of active membership in the Association.

It contains the constitution and by-laws, the official roster, a complete transcript of each paper presented at the meeting, and all discussion in connection with each paper. Complete minutes of the business sessions are also included.—[*Report, Annual Meeting, Indiana Veterinary Medical Association. Edited by H.*

A. Lidikay, secretary-treasurer, Darlington, Ind.]

Report of the Veterinary Director General, Dominion of Canada, 1945-1946

Animal diseases continue to be well under control in Canada. Anthrax, dourine, and glanders are nonexistent. Mange of horses, cattle, and sheep was limited to but 1 horse; hog cholera to 10 premises (Nova Scotia and Ontario); and rabies which overflowed from the U. S. A. in 1942 was reduced to 28 cases in dogs, 1 in cats, 4 in cattle, and 1 in hogs; 1,838 dairy herds have been pronounced free from brucellosis out of 2,715 under supervision. Area tuberculosis work continued to progress, and meat inspection, hindered somewhat by wartime shortage of personnel, proceeded to make headway. The cattle, sheep, calves, and swine inspected showed low incidences of condemnations. The progress of bovine tuberculosis eradication is shown in a series of comprehensive tables. The over-all picture is that of orderly command of the animal-disease situation.—[*Report of the Veterinary Director General, 1945-1946. 40-page pamphlet. Edmond Cloutier, Ottawa, Printer to the King's Most Excellent Majesty, 1947.*]

Mass Vaccination Against Undulant Fever

Mass vaccination against undulant fever has been practiced in France in recent years under the direction of the public health service. The vaccine is made from killed cultures of *Brucella abortus* and *melitensis*, freshly isolated from animal and human subjects. Since January, 1938, 4,022 persons have been vaccinated and watched for results. The trial subjects were laboratory workers, physicians and veterinarians, butchers, tripemen, livestock dealers, shepherds, domestics, small farmers, and breeders. In all—2,124 vaccinated and watched for three to eight years, 610 for two years, and 1,288 for one year—the protection was pronounced. Only a few suffered from mild attacks. Mass vaccination has also been practiced in Algeria and Argentina.—[*Excerpt from "Facts Concerning the Treatment and Prophylaxis of Brucellosis and Sanitary Measures Preconized." By Charles Dubois. Rev. Méd Vét., 97, (Nov., 1946): 520-552. Title translated.*]

Bovine Mastitis

A comprehensive treatise has been prepared on this important animal disease. The several phases of the problem of its control are considered in logical order. Beginning with the anatomy of the udder and the physiology of milk secretion, continuing with the pathology of the mammary gland and the diagnosis of mastitis on the basis of examination of the udder and of the milk secreted, then proceeding to the bacteriology and the classification of the streptococcic infections, the environmental and hereditary factors, the transmission, and the occurrence in heifers and cows, the book, finally, discusses the eradication of the disease—including treatment, vaccination, and herd and area control programs. The effect on quality of dairy products and on human health are dealt with in separate chapters, as is mastitis in goats.

It is a text which presents all phases of the problem in such a way that the practicing veterinarian can find not only the information for immediate attack in a given herd but also the background of anatomy and physiology which integrates the cause and effect in such a way that a logical plan of attack can be outlined, understood, and executed.

This is the most comprehensive book on the subject which has come to our attention—a review of all work previously done as interpreted and applied by eleven authors—and one which every general practitioner should keep among his immediate references. The veterinarian will find himself referring to it more and more frequently as he becomes increasingly familiar with it.—[*Bovine Mastitis, A Symposium. Edited by Ralph B. Little and Wayne N. Plastridge. 546 pages, illustrated. McGraw-Hill Book Co., Inc., New York, 1946. Price $7.00.*]

Poisonous Plants in Illinois

Plants native to Illinois which may be poisonous to farm animals are discussed. The booklet is logically arranged into (1) general suggestions regarding the avoidance of losses from this cause, and (2) a listing of the various plants arranged in groups or chapters according to the environment in which they are likely to grow.

An excellent booklet for ready reference is offered to the veterinarian and the livestock owner.—[*Illinois Plants Poisonous to Livestock. By L. R. Tehon, C. C. Morrill, and Robert Graham. 103 pages, 46 illustrations (8 in color). Circular 599, University of Illinois, Urbana.*]

Veterinary History of North Carolina, Second Edition

The North Carolina State Veterinary Medical Association again distinguishes itself by publishing a comprehensive history of the state's veterinary service, which brings the chain of chronological events up to date. The first edition was published twelve years ago. The volume contains a list of her veterinarians who served in World War I and World War II; a directory and brief biography of the graduate licentiates; nongraduates licensed under various laws since 1903; facts about the Association, list of its members, and an account of each of its 44 stated and special meetings; members of the AVMA; lists of the presidents and secretaries, of former members who have moved to other states, and nonactive members; meeting places since 1902; the boards of veterinary examiners since 1907; AVMA and other association activities; transcript of the Veterinary Practice Act as of 1946 and of the Association's constitution and by-laws; in short, a condensed, over-all view of the veter-

inary situation that inside and outside seekers of information will praise. The brief biographical sketches of North Carolina veterinarians is a complimentary feature that ought to be published in every state.—[*A Veterinary History of North Carolina. By J. H. Brown, Wm. Moore, and J. F. Faulhaber, authorized committee. Cloth. 108 pages. Owen Dunn Co., New Bern, N. C., 1946.*]

National Conference on Local Public Health Units, Proceedings

Printed as a supplement to the January, 1947, issue of the *American Journal of Public Health* is a booklet containing a complete report of a conference on the nation's local health units held at the University of Michigan, Ann Arbor, Sept. 9-13, 1946—in other words, a conference on the relatively new movement to spread a public health service throughout the nation by forming centrally controlled health departments (units) in each county or groups of two, three, or four counties united for the purpose of employing fulltime administrators, and staffs for full or part-time duty.

The expense of travel and maintenance was met by a grant from the Kellogg Foundation to the University of Michigan. The meeting was sponsored by the American Public Health Association and the Association of State and Territorial Health Officers. The attendance was 105 public health officers from practically all parts of the United States. Only professional questions pertaining to the project and its progress were discussed.

The printed proceedings contain some astonishing figures. Some 40,000,000 of our people live in districts having no public health service at all; 85,558,300 (65%) are thus protected—some only in part through municipal agencies. Of the 3,070 counties, only 1,322 are yet under the direction of fulltime health departments and these include the local health units that serve cities and counties separately or in combination with other counties. The proportion of counties in the various states that have organized public health units varies greatly. For example, all of the 97 counties of Alabama are thus served while only 19 out of the 102 counties of Illinois have voted to participate in the movement. In general, the South is far ahead of the North. Choosing at random, Indiana has but three such departments out of its 92 counties, Iowa three out of 99 counties, South Dakota one out of 69 counties, and so on for most of the northern states.

The proceedings indicate that the veterinary service may be invoked by this striking public health movement which was started in 1942. The interest shown in these units will at least show the prospects of cleaning up the insanitary slaughterhouses and dairies to which the rural people are exposed. Moreover, once these local units are organized and operating, investigation of the food supply cannot escape attention.—[*Proceeding of the National Conference on Local Health Units, Sept. 9-13, 1947, Ann Arbor, Mich. 160 pages. Paper. American Public Health Association, 1700 Broadway, New York 10, N. Y., 1947.*]

Studies of Bovine Piroplasmosis

Except in southern United States where the vector of bovine piroplasmosis as distinguished from anaplasmosis, babesiella, and theileriasis, has been practically exterminated, that cattle plague of semitropical regions remains a major problem of livestock sanitary science in many parts of the world, as this book, published by the Pasteur Institute of Algeria, indicates. In fact, its every word remains one of the hectic days of the nineteenth century before its relation to the lowly cattle tick was known and for the years following while the audacious plans for its eradication were being laid—plans which a comparatively few years of police work put so-called Texas fever in a subordinate place among the animal plagues of this country, leaving only an anaplasmosis of unmeasured potentiality behind. As to this extensive treatise, its material is organized as follows:

Part 1 defines the nature of piroplasmosis and gives the natural history of the casual Protozoa and their Arthropod vectors, of which there are a number of important genera to be studied.

Part 2 describes the five bovine piroplasmoses prevalent in North Africa, differentiating them from one another and from analagous infections in other countries.

Part 3 deals with the methods of vaccination which the Pasteur Institute has developed, and other prophylactic measures: medication, tickicides, segregation.

Part 4 treats of the general and comparative pathology of piroplasmosis, taxonomy, importance of slight morphologic differences (Piroplasma, Babesia, Theileria, Anaplasma), comparative virulence, chronic and latent forms, carriers, and other topics of value.

The book draws a clear portrait of the hemacytozoöns which are inseparable from a full knowledge of bovine epizoötiology. It is punctuated with commanding facts determined in more than thirty years of research, investigation, and large scale field experience. It is regrettable that space prevents a more complete review of this excellent work. Its 60 pages on Anaplasma ought to score high with workers among American cattle on the somewhat confusing potentiality reported for that red cell parasite. It seems to shed light on some of the controversial rumors on transmission, prophylaxis, and treatment.—[*Etudes de les Piroplasmoses Bovines. By Edmond Sergent, A. Donatien, L. Parrot, and F. Lestoquard. Cloth. 814 pages. Institut Pasteur d'Algerie, Algiers, Algeria, 1945.*]

There is work to be done in public health, and if the veterinarian does not do it someone else will. We have more to offer than we ourselves realize. — *Dr. Martin Baum, Los Angeles.*

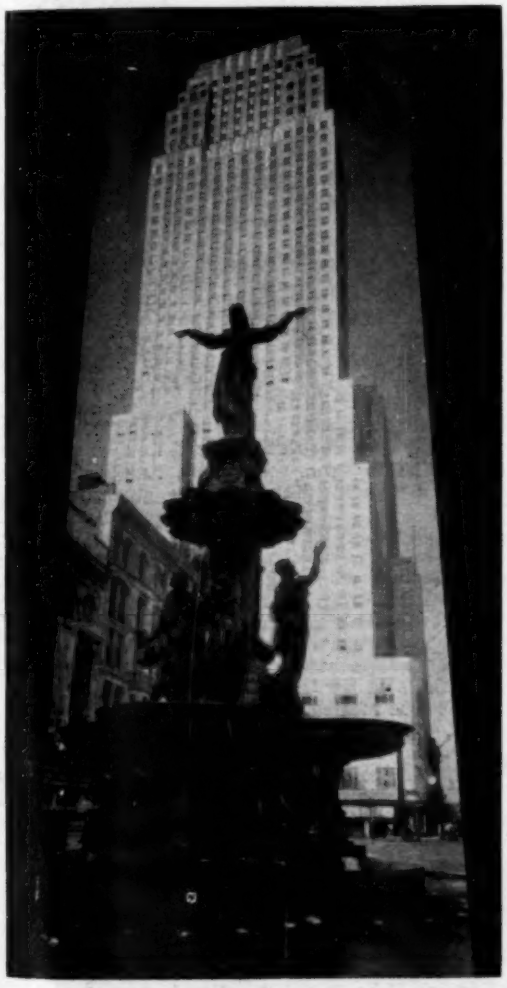
THE NEWS

Cincinnati Convention News

Dates—August 18-21, 1947

Headquarters—Netherland Plaza

Many reservations for hotel rooms have already been received by the Committee on Hotels and Housing in Cincinnati, of which Dr. S. G. Stephan is chairman. The committee, in cooperation with the Cincinnati Convention and Visitor's Bureau, has started work on the allocation of room space and is now sending out confirmation forms as promptly as possible.



Tyler Davidson Fountain with Carew Tower in Background, Cincinnati.

Those who plan to attend the convention should refer to the general program arrangement in the March JOURNAL, pp. 190-191, in scheduling arrival time for hotel reservations. Sunday arrival is urged for as many as possible since this will allow the hotels to room delegates and their families more expeditiously; it will also be possible to register for the convention on Sunday in advance of the opening rush on Monday morning.

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New Directory Delayed—Ready About May 1

Due to the failure of many members to return their directory listing cards, which were mailed out late in January with a postage-paid return envelope, publication of the 1947 directory is considerably delayed. The failure necessitated the preparation of some 3,000 cards in the central office; it also means that the directory listings for those who did not return their cards will not show their type of work, which information is in great demand.

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inary situation that inside and outside seekers of information will praise. The brief biographical sketches of North Carolina veterinarians is a complimentary feature that ought to be published in every state.—[*A Veterinary History of North Carolina. By J. H. Brown, Wm. Moore, and J. F. Faulhaber, authorized committee. Cloth. 108 pages. Owen Dunn Co., New Bern, N. C., 1946.*]

National Conference on Local Public Health Units, Proceedings

Printed as a supplement to the January, 1947, issue of the *American Journal of Public Health* is a booklet containing a complete report of a conference on the nation's local health units held at the University of Michigan, Ann Arbor, Sept. 9-13, 1946—in other words, a conference on the relatively new movement to spread a public health service throughout the nation by forming centrally controlled health departments (units) in each county or groups of two, three, or four counties united for the purpose of employing fulltime administrators, and staffs for full or part-time duty.

The expense of travel and maintenance was met by a grant from the Kellogg Foundation to the University of Michigan. The meeting was sponsored by the American Public Health Association and the Association of State and Territorial Health Officers. The attendance was 105 public health officers from practically all parts of the United States. Only professional questions pertaining to the project and its progress were discussed.

The printed proceedings contain some astonishing figures. Some 40,000,000 of our people live in districts having no public health service at all; 85,558,300 (65%) are thus protected—some only in part through municipal agencies. Of the 3,070 counties, only 1,322 are yet under the direction of fulltime health departments and these include the local health units that serve cities and counties separately or in combination with other counties. The proportion of counties in the various states that have organized public health units varies greatly. For example, all of the 97 counties of Alabama are thus served while only 19 out of the 102 counties of Illinois have voted to participate in the movement. In general, the South is far ahead of the North. Choosing at random, Indiana has but three such departments out of its 92 counties, Iowa three out of 99 counties, South Dakota one out of 69 counties, and so on for most of the northern states.

The proceedings indicate that the veterinary service may be invoked by this striking public health movement which was started in 1942. The interest shown in these units will at least show the prospects of cleaning up the insanitary slaughterhouses and dairies to which the rural people are exposed. Moreover, once these local units are organized and operating, investigation of the food supply cannot escape attention.—[*Proceeding of the National Conference on Local Health Units, Sept. 9-13, 1947, Ann Arbor, Mich. 160 pages. Paper. American Public Health Association, 1700 Broadway, New York 10, N. Y., 1947.*]

Studies of Bovine Piroplasmosis

Except in southern United States where the vector of bovine piroplasmosis as distinguished from anaplasmosis, babesiella, and theileriasis, has been practically exterminated, that cattle plague of semitropical regions remains a major problem of livestock sanitary science in many parts of the world, as this book, published by the Pasteur Institute of Algeria, indicates. In fact, its every word remains one of the hectic days of the nineteenth century before its relation to the lowly cattle tick was known and for the years following while the audacious plans for its eradication were being laid—plans which a comparatively few years of police work put so-called Texas fever in a subordinate place among the animal plagues of this country, leaving only an anaplasmosis of unmeasured potentiality behind. As to this extensive treatise, its material is organized as follows:

Part 1 defines the nature of piroplasmosis and gives the natural history of the casual Protozoa and their Arthropod vectors, of which there are a number of important genera to be studied.

Part 2 describes the five bovine piroplasmoses prevalent in North Africa, differentiating them from one another and from analagous infections in other countries.

Part 3 deals with the methods of vaccination which the Pasteur Institute has developed, and other prophylactic measures: medication, tickicides, segregation.

Part 4 treats of the general and comparative pathology of piroplasmosis, taxonomy, importance of slight morphologic differences (Piroplasma, Babesia, Theileria, Anaplasma), comparative virulence, chronic and latent forms, carriers, and other topics of value.

The book draws a clear portrait of the hemacytozoöns which are inseparable from a full knowledge of bovine epizoötiology. It is punctuated with commanding facts determined in more than thirty years of research, investigation, and large scale field experience. It is regrettable that space prevents a more complete review of this excellent work. Its 60 pages on Anaplasma ought to score high with workers among American cattle on the somewhat confusing potentiality reported for that red cell parasite. It seems to shed light on some of the controversial rumors on transmission, prophylaxis, and treatment.—[*Etudes de les Piroplasmoses Bovines. By Edmond Sergent, A. Donatien, L. Parrot, and F. Lestoquard. Cloth. 814 pages. Institut Pasteur d'Algerie, Algiers, Algeria, 1945.*]

There is work to be done in public health, and if the veterinarian does not do it someone else will. We have more to offer than we ourselves realize. — *Dr. Martin Baum, Los Angeles.*

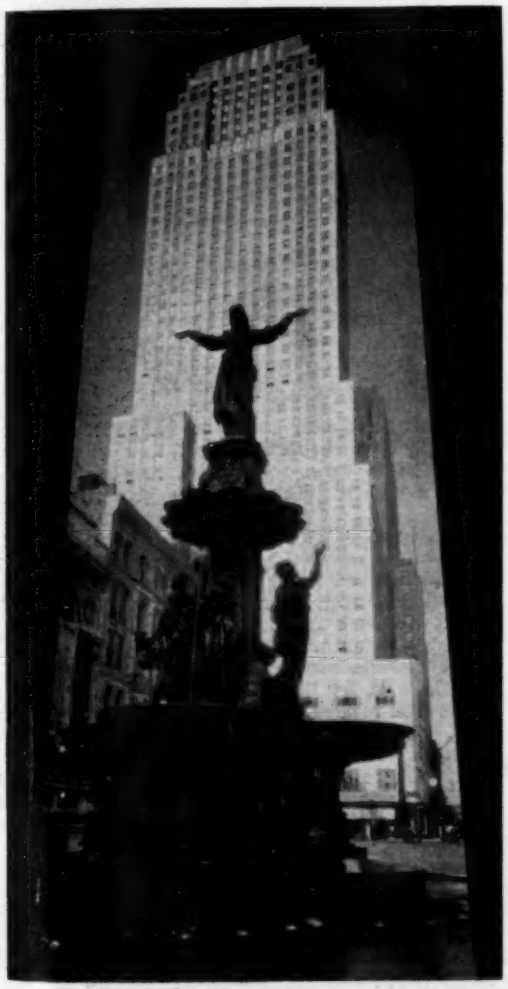
THE NEWS

Cincinnati Convention News

Dates—August 18-21, 1947

Headquarters—Netherland Plaza

Many reservations for hotel rooms have already been received by the Committee on Hotels and Housing in Cincinnati, of which Dr. S. G. Stephan is chairman. The committee, in cooperation with the Cincinnati Convention and Visitor's Bureau, has started work on the allocation of room space and is now sending out confirmation forms as promptly as possible.



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Dr. Karl F. Meyer Wins Sedgwick Memorial Medal

The Sedgwick Memorial Medal for 1946 was awarded to Dr. Karl F. Meyer, of San Francisco, Calif., on Nov. 12, 1946, during the seventy-fourth annual meeting of the Public Health Association in Cleveland by Dr. C.-E. A. Winslow, professor emeritus of public health, Yale University School of Medicine, and editor of the *American Journal of Public Health*. In making the presentation for the Public Health

Dr. Karl F. Meyer

Association, Dr. Winslow said that it was awarded "in recognition of your brilliant part in revealing the secrets of diseases transmitted by animals to man and of your vigorous and enlightened service in building up the public health program of the West Coast and of the nation."

Dr. Meyer was born in Basel, Switzerland, in 1884, and received a D. V. M. degree from the University of Zurich in 1909. He taught veterinary pathology and bacteriology at the University of Pennsylvania from 1910 to 1913, headed the laboratories of the Pennsylvania Livestock Sanitary Board for one year, and then moved to California to become professor of bacteriology and protozoölogy at the University of California for one year. In 1915, he joined the staff of the Hooper Foundation for Medical Research, where he has been since that time, becoming its director in 1924.

Dr. Meyer's investigations have ranged over a wide field, but his veterinary training has kept his attention focused on the animal reservoirs of human diseases. During recent years he has added to the general knowledge in the following problems: the discovery of the virus of Western type equine encephalomyelitis, botulism and other anaërobes as food contaminants, psittacosis and its spread from birds to man, and the bacteriology and epidemiology of sylvatic plague.

In his response, Dr. Meyer said: "I accept this medal and the honor conferred upon me by the American Public Health Association, but I do so with a feeling of deep humility because I recognize how great have been the contributions of my colleagues and associates, whose devotion to the cause of saving human life remains an everlasting incentive."

American Animal Hospital Association Meeting

The annual meeting of the American Animal Hospital Association will be held at the Hotel Mayo, Tulsa, Okla., April 22-24, 1947. An excellent program is scheduled and a good attendance is expected. All veterinarians are cordially invited to attend.

Member hospitals throughout the United States, Canada, Hawaii, and Puerto Rico will be represented. All hospital representatives of the Association must be members in good standing of the AVMA.

Woman Veterinarians Organize

All American women who are graduates of recognized veterinary colleges are eligible for membership in the now-forming American Women's Veterinary Medical Association. The organization has so far been unable to obtain the names and addresses of some of these women, and invites all who have not yet been reached to write to Dr. Lucille Dimmerling, 1060 Dresden Ave., East Liverpool, Ohio.

Information concerning the whereabouts of woman veterinary graduates who may not now be active in professional work or who, for other reasons, may not be on the Association's mailing list, will be appreciated.

AVMA Clipsheet—A New Service

On the opposite page is a facsimile of the first issue of *Animal Health Topics*, a clipsheet for newspaper editors, issued as a public service by the AVMA. At a meeting in August, 1945, the Executive Board authorized a study to determine the advisability of establishing a lay publication, modeled somewhat after *Hygeia*, an American Medical Association publication.

The survey was made and, because of problems in printing, in acquiring paper, in financing, and in editing, it was recommended that a clipsheet be issued rather than a magazine. Preparation and circulation of this clipsheet was authorized by the Executive Board at the annual meeting in Boston. With the return to the staff of Mr. J. J. Shaffer (*see* January JOURNAL), material was assembled, a paper supply was located, a mailing list was selected, and the first fruits of these labors (*see* opposite page) was mailed in the early part of February, 1947.

Animal Health Topics is being mailed once a month to about 5,000 weekly newspapers published in towns and cities of less than 10,000 population. It is hoped that this mailing list may eventually include a newspaper published in the home city of, or one that is circulating among the clients of, every member of the AVMA. If you live in a community of less than 10,000, which issues a weekly newspaper that circulates among your clients, ask the editor if he is receiving AVMA *Animal Health Topics*. If he is not, send us his name and the name of his paper, and we will add him to the list.

A·M·A

Animal Health Topics

A NEWS CLIP SHEET PUBLISHED BY THE AMERICAN VETERINARY MEDICAL ASSOCIATION
600 S. MICHIGAN AVE., CHICAGO 5, ILLINOIS

VOLUME 1 FEBRUARY 1947 NUMBER 1

Poultry Diseases Carry Public Health Threat

Poultry diseases are attracting increasing widespread attention that imposes extra responsibilities on the nation's poultry producers.

This view was expressed by veterinary officials in Chicago last week, who said that some of these diseases have taken on double importance because of their potential danger to human health.

Newcastle Trouble Heads List

Newcastle disease continues as a major problem of the poultry industry, they said. Canada touched off a fresh warning to that effect recently by prohibiting entry into the Dominion of any type of poultry not certified by an official of the U. S. Bureau of Animal Industry to be free of that disease. Formerly prevalent only in foreign countries, this virus-caused malady already has been diagnosed in a large number of states from coast to coast.

In Palestine, an outbreak of eye infection in women has been traced to contact with chickens afflicted with Newcastle disease.

Food Poisoning from Eggs

British scientists also are finding reason to turn to poultry illnesses as a point of national concern. Their interest to this end lies mainly in powdered eggs, used widely in England, which can harbor organisms from infected hen droppings that cause food poisoning in man.

A short time ago, in the United States, scientists incriminated improperly cooked eggs from pullorum-diseased chickens as the cause of an extensive outbreak of human food poisoning. Previously, doctors had considered man immune to the germ of pullorum disease. More recently, 23 out of 27 people who ate food containing raw eggs came down with food poisoning. The poisoning agent, believed to have come from the raw eggs, was the same organism (Salmonella aertrycke) that causes salmonellosis in poultry.

These developments are turning more public attention toward poultry producers, the veterinary officials have observed, and they believe that such current alarms over poultry dangers to human health, if unheeded, will in time be costly to the entire industry.

—C—I—P—

COMPOUND CONTROLS SHEEP PARASITES

Phenothiazine-salt mixtures have been found useful in keeping down parasitic infestations of sheep on pasture. Although such treatment does not take the place of individual dosing, it does reduce the amount of dosing required.

COWS DIE OF HEART FAILURE

Heart failure can result when cattle are deprived of vitamin E, but this shortage seems to have no effect on the fertility of the animals. If this vitamin is constantly absent from the ration, the heart becomes progressively weaker and death occurs suddenly.

WATCH HORSES' FEED IN WINTER

Horses are more apt to come down with colic and impaction during winter than in any other season. Subsisting largely on coarse roughage, or consuming frozen feeds, and drinking ice-cold water are the chief causes of these troubles. A good grade of roughage, water of proper temperature and a little exercise every day will do wonders toward prevention.

Chemical Dumps Burned; Fumes Poison Livestock

Large-scale poisoning of livestock resulted recently when wartime dumps in the hills of Scotland, between Kippen and Fintry, were set afire to dispose of smoke bombs and poison gas containers. The incident afforded a vivid though unwanted demonstration of how chemical warfare can wipe out a nation's livestock population.

Fumes from the burning dumps descended to the valleys and started a wave of sickness and abortion among farm animals. A large number of deaths resulted and, in addition, about 1,200 cattle and 3,000 sheep from 40 farms had to be removed to Edinburgh for slaughter.

Veterinary investigators said that although it was improbable that all of this number had been poisoned, the slaughter precaution was necessary to prevent scattering of the contamination over the country via sales rings.

The government assumed responsibility for the losses and owners were compensated.

—C—I—P—

Swine Need Good Protein

Quality of protein is not of prime importance in feeding dairy cows, beef cattle and sheep, because bacteria in the rumen of these animals manufacture good protein from the poorer types in the feed. In swine, however, the quality has to be good.

Research studies have shown that swine on good pasture apparently do not need animal protein, but if they are not on pasture, they must have a certain amount of such protein. This is especially true in young pigs.

—C—I—P—

Dogs and Cats May Spread Brucellosis to Man

Brucellosis, commonly called Bang's disease in cattle and undulant fever in man, can infect dogs and cats without their ever showing outward signs of the disease, according to the Journal of the American Veterinary Medical Association.

This fact should be given serious thought by all pet owners, the Journal says, because it appears that dogs and cats may be capable of spreading this disease to their owners, as well as to other animals. Common site of brucellosis infection in pets is the genital organs, and often it can be detected only through an autopsy.

—C—I—P—

Frozen Milk Seen as Food Locker Item

Fresh homogenized milk frozen in paper containers, a development of wartime military research, may be a standard item in frozen-food lockers of the future, according to Dr. J. G. Hardenbergh, executive secretary of the American Veterinary Medical Association.

At present, there are areas in the United States where fresh milk is not available in sufficient amounts to meet demand. Usually, wherever hay is in short supply for feeding dairy cattle, milk also is in short supply.

These areas, Dr. Hardenbergh believes, would be ready markets for frozen milk, if it could be sold at a fair price. Likewise, hospitals, schools and other institutions are potential large-scale buyers. The Panama Canal Zone, where at times milk can be obtained only through a doctor's prescription, would also be a fertile market, he says.

Foot and Mouth Disease Could Wipe Out U. S. Meat Supply

If foot and mouth disease should spread among American livestock, it could easily strip the country's meat and milk supply down to starvation levels.

This warning came today from the American Veterinary Medical Association as the nation's veterinarians kept a 24-hour guard for signs of foot and mouth disease outbreaks in cattle imported from Mexico.

Appearance of the disease in Mexico recently caused the United States to close its borders to such imports, but there is great danger that cattle brought across prior to the embargo may yet spread the disease. In fact, the Association says, outwardly healthy animals can harbor the agent of this disease, a virus, for an indefinite period and spread it long after an outbreak has seemingly subsided.

Cattle brought in from Mexico before the border was closed may, therefore, have planted infection in American herds that will not become evident for many months.

Transmissible to Humans

In its deadliest form, foot and mouth disease can either kill or render valueless practically half of the cattle, sheep and hogs it strikes, the Association points out, with the caution that it sometimes affects human beings. It also affects goats and all wild animals of the deer family. Although this livestock plague is widespread in many foreign countries, it has not appeared in the United States since 1929.

Potential Danger Underestimated

Probably because the government has been so successful in keeping out foreign sources of infection, the Association believes, many people have underestimated the damage this disease can do.

Current threats to the health of American herds should bring a renewed understanding of the economic ruin and famine that could follow if foot and mouth disease should strike, these veterinary authorities emphasize. They conclude that while America is recognized today as the world's safest place to raise livestock, it can only remain so through the maintenance of strict embargoes.

—C—I—P—

Drug to Step Up Milk Production

A report by New York physicians that no harmful effects were observed in children who drank milk from cows treated with synthetic thyroprotein has encouraged veterinarians to do more extensive research with this drug.

In a recent discovery, it was found that feeding cows synthetic thyroprotein, a thyroid gland stimulant, increased milk production markedly.

Officials of the American Veterinary Medical Association view the treatment with cautious optimism, stressing the fact that much remains to be learned about this procedure.

—C—I—P—

Horse "Moon Blindness" Prevented by Penny-a-Day Vitamin

Studies conducted by Army veterinarians, as reported in the American Journal of Veterinary Research, disclose that the baffling "moon blindness" of horses can be prevented by feeding riboflavin, one of the B-complex vitamins. Actual cost of the vitamin, according to these investigators, is about a penny a day per animal.

While supplemental feeding of riboflavin was found to prevent new cases of the disease from appearing in horses, it had no curative effect on those which already were afflicted with this trouble.

It is known that moon blindness, properly called periodic ophthalmia, occurs more frequently in rainy regions, possibly because hay that has been saturated by rain and then exposed to sunlight loses much of its riboflavin content.

The investigators recommend that this vitamin be fed regularly to horses in places where the disease is prevalent.

—C—I—P—

DDT MAKES CATS SICK

Although DDT is excellent for destroying fleas on pets, it should not be used on cats. It is highly toxic, and when applied to cats it makes them ill, owing to their habit of licking.

Streptomycin Recommended for Valuable Animals

When streptomycin, the new germ-killing drug, becomes available in sufficient quantities, it will be employed in treating certain illnesses of highly valuable animals, especially purebred cattle.

Dr. R. C. Klussendorf of Chicago, a veterinary specialist in cattle diseases, says that notwithstanding the present high cost of this drug, many cases offer economic justification for its use. For example, he says, if it could save the life of a prize-winning cow worth thousands of dollars, it would be worth while no matter what the cost might be. It could also be used to advantage in rare zoo and circus animals, he believes, and in pets where sentiment overrules the monetary factor.

—C—I—P—

HOW TO KEEP LIVESTOCK FROM BEING HEALTHY

Dr. J. F. Bullard of Purdue University will probably not be surprised at anything he finds in a cow from now on. An Indiana farmer called him not long ago to perform an operation for uterine prolapse on a valuable cow, and during the course of the operation he recovered a quart glass jar well embedded in an infection of the genital organs.

Inquiry by the Purdue veterinarian disclosed that a bungling herdsman had tried to perform the same operation some time back and had inserted the glass jar to prevent recurrence of the prolapse.

Another of Dr. Bullard's patients, a farm horse, had swallowed a 20-inch piece of garden hose. This happened, the Doctor says, when the owner tried a "home made" treatment for choke in the animal by inserting a long piece of hose through the mouth to relieve the condition. The horse chewed it during the treatment and swallowed the inserted part. Miraculously, the object remained lodged in the horse for about 14 months with no apparent ill effects, and the animal finally passed it.

Facsimile of AVMA clipsheet (See opposite page).

Committee on Diseases of Small Animals Appointed

President B. T. Simms has appointed the following special committee on diseases of small animals which has not been announced previously.

Wayne H. Riser, *chairman*, Box 550, Evanston, Ill.

Duane L. Cady, 2101 Texas St., El Paso, Texas.

C. E. DeCamp, Post Road at Maple St., Scarsdale, N. Y.

S. E. Philips, 1455 N. Riverside, Medford, Ore.

K. W. Smith, 1002 34th St., Sioux City, Iowa.

AVMA Represented at UNESCO Conference

President B. T. Simms named Dean R. A. Kelser, School of Veterinary Medicine, University of Pennsylvania, and Dr. M. S. Shahan, Pathological Division, BAI, to represent the Association at the National Conference on United Nations Educational, Scientific, and Cultural Organization held in Philadelphia, March 24-26, 1947. About 1,000 national organizations were invited to send two representatives each to the conference presided over by Chairman Milton S. Eisenhower, president of Kansas State College.

The purpose of the conference was to outline the broad functions of UNESCO, its recommended projects, and the procedures by which organizations and individuals in the United States can assist in obtaining nation-wide understanding and support of its program.

Books for Chinese Library Solicited

The Chinese government, in March, 1945, initiated plans for the establishment of the National Roosevelt Library, as a memorial to the late President, in Chungking. Its location in the wartime capital was originally the site of the National Central Library, and the government has had transferred there several whole private libraries, mainly Chinese and Japanese books. In addition to its function as a source of information on President Roosevelt and literature on Sino-American relations, it is hoped that it will fill the need for a modern library service in China. Any suitable books or journals, veterinary or otherwise, from members of the profession would be gratefully accepted.

APPLICATIONS

The listing of applicants conforms to the requirements of the administrative by-laws—Article X, Section 2.

First Listing

ALEXANDER, MARVIN
1921 Bay Rd., Miami Beach 39, Fla.
V.M.D., University of Pennsylvania, 1946.
Vouchers: J. D. Beck and F. E. Lentz.

CORREA, OUTURBINO
Rua Jose do Patrocinio no 324, Porto Algere, Rio Grande do Sul, Brazil.
D.V.M., University of Porto Algere, Rio Grande, 1936.
Vouchers: S. Torres and R. C. Klussendorf.

POWLEY, FREDERICK J.
613 Dominion Public Bldg., Winnipeg, Manitoba, Can.
D.V.M., Ontario Veterinary College, 1935.
Vouchers: J. E. Houston and J. W. Fasken.

RATTRAY, ALEXANDER J.
10149 Clifton Pl., Edmonton, Alberta, Can.
D.V.M., Ontario Veterinary College, 1942.
Vouchers: R. Walton and P. R. Talbot.

SANDERS, ALBERT, JR.
Stephenson, Mich.
D.V.M., Chicago Veterinary College, 1908.
Vouchers: B. J. Killham and F. Thorp, Jr.

STEEL, JAMES D.
Faculty of Veterinary Science, University of Sydney, N.S.W., Australia.
D.V.M., Sydney University, 1942.
Vouchers: J. G. Anderson and R. C. Klussendorf.

SWEATMAN, JOHN C.
Library St., Roxbury, New York.
D.V.M., Cornell University, 1936.
Vouchers: A. C. Goss and S. P. Dansky.

Second Listing

Aranez, Jose B., Tanauan, Batangas, Philippines.

Batsche, Joseph H., 3962 Lowry Ave., Cincinnati 29, Ohio.

Buie, Robert C., Boerne, Texas.

Dunlap, Mary K., 423 West 59th St., Kansas City, Mo.

Hickman, William M., 605 Garrard St., Covington, Ky.

McBride, Andrew L., 4936 Pine St., Omaha 6, Neb.

Pas, Harold H., 21 Livestock Exchange Building, Wichita 2, Kan.

Queiroz, Eduardo R., Avenida Borges de Medeiros, 549 40 andar, Porto Alegre, Rio Grande do Sul, Brazil.

Scatterday, James E., P. O. Box 633, Gainesville, Fla.

Slatko, Leon, 1816 Colonial Ave., Waco, Texas.

1947 Graduate Applicants First Listing

The following are graduates who have recently received veterinary degrees and who have applied for AVMA membership under the provision granted in the Administrative By-Laws to members in good standing of junior chapters. Applications from this year's senior classes not received in time for listing this month will appear in later issues. An asterisk (*) after the name of a school indicates that all of this year's graduates have made application for membership.

Alabama Polytechnic Institute

ALSTON, WILLIAM R., D.V.M.
Linden, Ala.
Vouchers: T. C. Fitzgerald and R. S. Sugg.

Bateman, Osgood M., D.V.M.
Sandersville, Ga.
Vouchers: T. C. Fitzgerald and R. S. Sugg.
Beasley, Hugh C., D.V.M.
Dixie, Ga.
Vouchers: T. C. Fitzgerald and R. S. Sugg.
Broussard, John R. Jr., D.V.M.
Box 125, Porterdale, Ga.
Vouchers: T. C. Fitzgerald and R. S. Sugg.
Bryant, John E., D.V.M.
R.R. 1, Box 380, Davis Rd., Lake Worth, Fla.
Vouchers: T. C. Fitzgerald and R. S. Sugg.
Clark, William B. Jr., D.V.M.
Box 668, Wilson, N. Car.
Vouchers: T. C. Fitzgerald and R. S. Sugg.
Davis, Harold C., D.V.M.
Sylvester, Ga.
Vouchers: T. C. Fitzgerald and R. S. Sugg.
DeMoss, William R., D. V. M.
Jackson Animal Hospital, Meadow Brook Rd., Jackson, Miss.
Vouchers: T. C. Fitzgerald and R. S. Sugg.
Galyon, Orville E., D.V.M.
Sweetwater, Tenn.
Vouchers: T. C. Fitzgerald and R. S. Sugg.
Gandy, Ralph E. Jr., D.V.M.
Darlington, S. Car.
Vouchers: T. C. Fitzgerald and R. S. Sugg.
Gentry, Robert I., D.V.M.
4700 Tennessee Ave., Chattanooga, Tenn.
Vouchers: T. C. Fitzgerald and R. S. Sugg.
Humphreys, Lewis G., D.V.M.
305 East Brow Rd., Lookout Mountain, Tenn.
Vouchers: T. C. Fitzgerald and R. S. Sugg.
Kinard, Henry B. Jr., D.V.M.
Ninety-Six, S. Car.
Vouchers: T. C. Fitzgerald and R. S. Sugg.
Krauss, Richard E., D.V.M.
1036 Hollywood Pl., West Palm Beach, Fla.
Vouchers: T. C. Fitzgerald and R. S. Sugg.
Lauderdale, Byron N. Jr., D.V.M.
1115 Madison Ave., Montgomery, Ala.
Vouchers: T. C. Fitzgerald and R. S. Sugg.
Little, John D., D.V.M.
Monroe, Tenn.
Vouchers: T. C. Fitzgerald and R. S. Sugg.
Long, Forrest B., D.V.M.
General Delivery, Charlotte, N. Car.
Vouchers: W. J. Gibbons and I. S. McAdory.
McKee, George O. Jr., D.V.M.
521 Lamar Ave., Selma, Ala.
Vouchers: T. C. Fitzgerald and R. S. Sugg.
Madill, James W., D.V.M.
503 Ozule St., Tampa 6, Fla.
Vouchers: T. C. Fitzgerald and R. S. Sugg.
Needham, Jasper N. Jr., D.V.M.
R.F.D. 2, Box 59, Wilmington, N. Car.
Vouchers: T. C. Fitzgerald and R. S. Sugg.
Phifer, Joseph T., D.V.M.
1617-11th St., Tuscaloosa, Ala.
Vouchers: T. C. Fitzgerald and R. S. Sugg.
Reaux, Harold A., D.V.M.
Rt. 1, Box 134 C., New Iberia, La.
Vouchers: T. C. Fitzgerald and R. S. Sugg.
Rumbley, Hector M. Jr., D.V.M.
Monroeville, Ala.
Vouchers: T. C. Fitzgerald and R. S. Sugg.
Shore, Tom T., D.V.M.
Baldwin, Ga.
Vouchers: T. C. Fitzgerald and R. S. Sugg.
Simpson, David A., D.V.M.
6709 Division Ave., Birmingham, Ala.
Vouchers: R. S. Sugg and I. S. McAdory.
Williams, Joseph W., D.V.M.
Luverne, Ala.
Vouchers: T. C. Fitzgerald and R. S. Sugg.
Vaughn, James F., D.V.M.
320 North 4th St., Paducah, Ky.
Vouchers: T. C. Fitzgerald and R. S. Sugg.
Young, Raymond J., D.V.M.
119½ Cox St., Auburn, Ala.
Vouchers: T. C. Fitzgerald and R. S. Sugg.

University of Pennsylvania

Aucker, Ralph S., V.M.D.
Port Trevorton, Pa.
Vouchers: T. DeMott and F. E. Lentz.
Cavanaugh, Francis J., V.M.D.
808 West Broad St., Quakertown, Pa.
Vouchers: F. E. Lentz and J. K. Keim.
Chardon, Humberto Z., V.M.D.
P.O. Box 843, Ponce, P. R.
Vouchers: R. L. Berger and T. DeMott.
Church, John R., V.M.D.
21 E. Levering Mill Rd., Bala-Cynwyd, Pa.
Vouchers: F. E. Lentz and J. K. Keim.
Corkhill, de Paul J., V.M.D.
1151 N. 19th St., Allentown, Pa.
Vouchers: E. T. Booth and W. J. Lentz.
Dailey, Hugh F., V.M.D.
24 Glen Ave., Newton Center, Mass.
Vouchers: J. D. Beck and E. L. Stubbs.
DeCoudres, William H., V.M.D.
R.D. 4, Meadville, Pa.
Vouchers: F. E. Lentz and J. K. Keim.
Denlinger, Everett E., V.M.D.
Paradise, Pa.
Vouchers: J. H. Mark and R. B. Weber.
Ferrigno, Frank F., V.M.D.
358 Jackson St., Willimantic, Conn.
Vouchers: F. E. Lentz and E. A. Churchill.
Fessenden, Paul E., V.M.D.
Main St., Brookline, N. H.
Vouchers: D. G. Lee and J. D. Beck.
Fuss, Robert W., V.M.D.
1571 Undercliff Ave., New York 53, N. Y.
Vouchers: W. J. Lentz and D. G. Lee.
Groveman, Mervin D., V.M.D.
140 Farnsworth Ave., Bordentown, N. J.,
Vouchers: E. L. Stubbs and J. W. Mills.
Gundlach, Charles E., V.M.D.
421 Wilson Ave., Washington, Pa.
Vouchers: M. W. Allam and T. DeMott.
Kornblatt, Lloyd B., V.M.D.
37 Highland Ave., Metuchen, N. J.
Vouchers: E. L. Stubbs and H. M. Martin.
Lawhon, Glenn J. Jr., V.M.D.
Animal Hospital, Hartsville, S. Car.
Vouchers: J. H. Mark and T. DeMott.
Lebeda, Josfph M., V.M.D.
191 Clinton Rd., West Caldwell, N. J.
Vouchers: J. D. Beck and F. E. Lentz.
Lorentzen, Kay W., V.M.D.
2865 Jackson St., San Francisco 15, Calif.
Vouchers: W. B. Boucher and E. A. Churchill.
McManus, Norbert R., V.M.D.
Box 179, R.F.D. 1, Old Kings Rd., Catskill, N.Y.
Vouchers: G. A. Dick and E. L. Stubbs.

MACKENZIE, ROLAND S., V.M.D.
225 Greenwood Ave., Jenkintown, Pa.
Vouchers: W. J. Lentz and E. A. Churchill.
MARKLE, HOWARD E., V.M.D.
R.D., West Newton, Pa.
Vouchers: J. T. McGrath and R. B. Weber.
MILLER, ROBERT L., V.M.D.
450 Norman Ave., Arcadia, Calif.
Vouchers: H. M. Martin and R. C. Snyder.
MONAHAN, ROBERT R., V.M.D.
15 Eden St., Framingham, Mass.
Vouchers: G. A. Dick and H. M. Martin.
NELSON, RUSSELL A., V.M.D.
Box 201, Oakdale, Calif.
Vouchers: J. D. Beck and E. A. Churchill.
PASTOR, THEODORE J., V.M.D.
5456 Park Ave., Bridgeport, Conn.
Vouchers: D. K. Detweiler and E. A. Churchill.
RUBIO, DORIAN L., V.M.D.
P. O. Box 224, Ponce, P. R.
Vouchers: J. D. Beck and E. L. Stubbs.
SPALDING, ROBERT S., V.M.D.
608 S. 13th St., San Jose, Calif.
Vouchers: H. M. Martin and D. G. Lee.
STEINMETZ, ADOLF, V.M.D.
Towerhill Farms, Dunlop Rd., Huntington, Long Island, N. Y.
Vouchers: J. H. Mark and F. E. Lentz.

Second Listing

Kansas State College*

Ballentine, Jack G., D.V.M., 210 Clark St., Bonner Springs, Kan.
Barry, James W. Jr., D.V.M., 5000 Wells Rd., Kansas City 3, Kan.
Carnes, John F., D.V.M., 2702 W. Okmulgee, Muskogee, Okla.
Cherry, Brainerd G., D.V.M., Redwood Falls, Minn.
Comba, Louis C., D.V.M., 112 E. Fourth St., Picher, Okla.
Cordero, Rosendo, D.V.M., Box 275, Humacao, P. R.
Cornell, Robert L., D.V.M., 662 S. McDonnell, Los Angeles 22, Calif.
Diaz, Jose A., D.V.M., Box 723, Rio Piedras, P.R.
Fogleman, Ralph W., D.V.M., Colby, Kan.
Frazier, Samuel G., D.V.M., Soddy, Tenn.
Frey, William A., D.V.M., 636 E. Iron, Salina, Kan.
Geisler, Ordelia, D.V.M., 919 L, Lincoln, Neb.
Hardin, Clarence E., D.V.M., 815 B. St., Petaluma, Calif.
Hebert, Benjamin O., D.V.M., 505 Olive St., Menlo Park, Calif.
Hervey, James S., D.V.M., Belle Plaine, Kan.
Hubbs, Junior C., D.V.M., Box 453, Dorrance, Kan.
Ingmire, Cecil W., D.V.M., 125 N. Rockhill, Council Grove, Kan.
Johnson, Milo L., D.V.M., 2000 Willow Ave., Topeka, Kan.
Kaslow, Ruth, D.V.M., 2080 84th St., Brooklyn, N. Y.
Kelly, Arthur L., D.V.M., Carroll, Iowa.
Kinard, Harold W., D.V.M., Box 413, Ruffin, S. Car.
Linders, Robert E., D.V.M., Baldwin, Ill.
Low, Donald G., D.V.M., 639 Grant St., Denver 3, Colo.
Luke, Otto F. Jr., D.V.M., Solomon, Kan.
McHenry, Leslie J., D.V.M., c/o Maison May, 943 1st Ave., New York, N. Y.
McLaughlin, Alvah R. Jr., D.V.M., 219 W. 7th St. Terr., Kansas City 5, Mo.
Moles, Clyde E., D.V.M., 3611 Walnut St., Kansas City 2, Mo.
Narotsky, Saul, D.V.M., Columbia, Conn.
Norby, Marvin A., D.V.M., 207 S. Iuka, Pratt, Kan.
Nord, Seymour D., D.V.M., 299 Vassar Ave., Newark, N. J.
Oliver, Pedro A., D.V.M., Del Carmen St. No. 1303, Santurce, P. R.
Parker, Jack A., D.V.M., Byers, Texas.
Pumphrey, Olen, D.V.M., Fort Branch, Ind.
Rehfeld, Carl E., D.V.M., Warner, S. Dak.
Ronk, Howard W., D.V.M., 434 Shoshone St. W., Twin Falls, Idaho.
Santiago, Francisco M., D.V.M., P. O. Box 23, Penuelas, P. R.
Schwartz, William, D.V.M., 7701 Bay Parkway, Brooklyn, N. Y.
Warren, Dale M., D.V.M., 13 West Oak St., Fort Scott, Kan.
Williams, Ivor, D.V.M., 2919 N. Arno St., Albuquerque, N. M.
York, Fred A., D.V.M., Box 268, Panora, Iowa.

Michigan State College

Browne, Josephine, D.V.M., 1132 Third Street N., Fargo, N. D.

U. S. GOVERNMENT

Veterinary Personnel Changes in the Bureau of Animal Industry

TRANSFERS

Walter L. Bolin, from New York, N. Y., to Montgomery, Ala.
Arnold L. Childery, from Baton Rouge, La., to Jefferson City, Mo.
Albert V. Dixon, from Atlanta, Ga., to Moultrie, Ga.
Francis Herchenroeder, from Montgomery, Ala., to New York, N. Y.
Nathan H. Howlett, from Montpelier, Vt., to Springfield, Ill.
Isaac H. Kaufman, from Newport, Vt., to Buffalo, N. Y.
Elmer Lash, from Washington, D. C., to Olympia, Wash.
Arnold E. Peter, from Lansing, Mich., to Fort Worth, Texas.
Arthur L. Tellejohn, from Omaha, Neb., to Columbus, Ohio.
Earl M. Walker, Denver, Colo., from Meat Inspection to Interstate Inspection.

RESIGNED

Paul Ambery, Columbia, S. Car.
Maurice Belden, Columbus, Ohio.
Joseph Belinsky, Charleston, W. Va.
Wilfred M. Crow, Portland, Ore.
Robert W. Day, Nashville, Tenn.
Jack A. King, Albuquerque, N. M.

Charles F. Partridge, Atlanta, Ga.
Thomas V. Raines, Jr., Sioux City, Iowa.

RETIRED

Walter Boyce, Kansas City, Kan.
James C. Exline, Olympia, Wash.
Fred W. McCray, Sioux City, Iowa.

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Loan of War Department Films on Medical Subjects.—The Office of the Surgeon General has about 60 motion pictures on medical subjects which are available for loan to the medical profession and allied scientific groups. Information from Col. J. A. McCallam, V.C., chief of the Veterinary Division, S.G.O., indicates that some of these may be of interest to veterinary groups for professional showing. Of the 60 titles now available, there are films on schistosomiasis (snail fever), removal of magnetic foreign bodies, intravenous anesthesia, plaster casts, DDT, malaria control, purification of water, household insects, preparation and insertion of tantalum plates, mechanism of cell division, medical service in the invasion of Normandy and in the jungle, etc.

Most of the films are sound pictures in black and white and run about fifteen to thirty minutes. They are available only to medical and allied scientific groups for nonprofit showing under specified conditions. Full information, including a list of the films and request forms, can be obtained by writing to: Chief, Education and Training Division, Office of the Surgeon General, The Pentagon, Washington 25, D. C.

• • •

Medical Microfilm Service Now Available.—The photoduplication services of the Army Medical Library are now available, on a cost basis, to civilian physicians, institutions, and research workers, according to a recent release. This means direct access to the Library's enormous resources of medical literature.

During the war, the Army Medical Library supplied millions of pages of microfilmed medical articles to the armed services and other research agencies. This principle of immediate and direct aid to the user, wherever he might be, introduced a new technique and was of immense help to the medical and surgical services of the armed forces in far-off places. Its availability now to civilian agencies and individuals promises real aid to those who do not have ready access to adequate library resources.

A fee of 50 cents is charged for filming any periodical article appearing in a single volume, regardless of length. Microfilming from monographs is furnished at 50 cents for 50 pages or less. Photostats also can be supplied at 50 cents per 10 pages or less. The material filmed is not for reproduction without permission of the copyright owner; in short, it is for reference purposes primarily.

For convenience, and to keep bookkeeping costs down for the Army Medical Library, users may buy coupons in any desired quantity at 50 cents each. Order blanks are available on request. Make checks payable to Treasurer of the United States, and send to Army Medical Library, 7th St. & Independence Ave., S.W., Washington 25, D. C.

CANADIAN GOVERNMENT

Poultry Certificate Required at Border.—Veterinary Director Childs has advised boundary veterinary inspectors and transportation companies, through an order of the Minister of Agriculture, that the entry into Canada of live chickens, turkeys, pigeons, geese, ducks, barnyard fowl, or other birds raised under domestic conditions, and also the eggs for hatching purposes of the foregoing class of birds from the United States is prohibited, unless accompanied by a "specified certificate" from an official of the U. S. BAI. This order was issued because of "information received from the United States BAI [that] the contagious disease of poultry known as avian pneumoencephalitis (Newcastle Disease) exists in the United States of America."

COMMENCEMENT

Kansas State College

At the commencement exercises of the Kansas State College on Feb. 4, 1947, Dean R. R. Dykstra, of the School of Veterinary Medicine, presented the following candidates for the degree of Doctor of Veterinary Medicine:

R. C. Antunano
Jack G. Ballentine
James W. Barry, Jr.
Jose A. D. Bonnet
Walter C. Bowie
Earl H. Brown, Jr.
John F. Carnes
Brainerd G. Cherry
Louis C. Comba
Robert L. Cornell
Ralph W. Fogleman
Samuel G. Frazier
William A. Frey
Ordella I. Geisler
C. E. Hardin, Jr.
Benjamin O. Hebert
James S. Hervey
Gladus O. Howell
Junior C. Hubbs
Cecil W. Ingmire
Milo L. Johnson
Ruth Keslow
Arthur L. Kelly
Harold W. Kinard
Robert E. Linders
Donald G. Low
Otto F. Luke, Jr.
Leslie J. McHenry
A. R. McLaughlin, Jr.
Clyde E. Moles
Saul Narotsky
Marvin A. Norby
Seymour D. Nord
Pedro A. Oliver
Jack A. Parker
Zenas O. Pumphrey
Carl E. Rehfeld
Howard W. Ronk
F. M. Santiago
William Schwartz
Dale M. Warren
Ivor Williams
Fred A. York

AMONG THE STATES AND PROVINCES

Arkansas

Artificial Insemination Encouraged.—The state legislature has passed a bill appropriating $35,000 to establish an artificial insemination program for dairy cattle under the direction of the Agricultural Experiment Station. The bill provides for two research workers each to be paid $5,500 a year.

s/FRANK HURLBUT, *Yellville.*

Choice Locations.—"By writing to Mr. G. Hamilton Moses, president of the Arkansas Power and Light Company and chairman of the state chamber of commerce at Pine Bluff, veterinarians may obtain information about choice locations," writes Dr. Frank Hurlbut of Yellville.

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County Agent Not a Veterinarian.—The Marion Chamber of Commerce has distributed a circular to dispel the erroneous belief that the county agent is a veterinarian. "It is safe to say that hundreds of dollars worth of stock is lost each week by the lack of a qualified veterinarian to treat them," so says the Yellville (Ark.) *Echo*.

• • •

Annual Meeting.—Forty-one veterinarians attended the thirty-first annual meeting of the Arkansas Veterinary Medical Association on February 13 in Little Rock.

Featured on the day's program were Dr. A. H. Groth, who discussed problems of the southern practitioner, and Dr. Guy A. Railsback, who spoke on anaplasmosis and hog cholera vaccine. Several interesting cases were demonstrated and discussed at the small animal clinic held at Dr. Rease Mitcham's hospital.

The officers for the year ahead are: Dr. Orris Nipper, Magnolia, *president;* Dr. C. T. Mason, Little Rock, *vice-president;* and Dr. T. D. Hendrickson, Little Rock, *secretary-treasurer*.

s/T. D. HENDRICKSON, *Secretary*.

• • •

Ark-La-Tex Meetings.—Veterinarians of the Ark-La-Tex area met on February 24. Dr. H. Schmidt, chief of the Veterinary Division, Texas A. & M. College, was the speaker. When the group met again on March 4, Dr. Guy A. Railsback, of the Cutter Laboratories, presented a paper on the manufacture of biological products and their use. Anthrax was the subject for group discussion at both meetings.

s/DAVID H. TRAYLOR, *Secretary*.

California

Esto Perpetua.—The phoney rumors about the passing of the horse didn't scare the buyers at Arcadia in February when 4 Thorobreds of the Louis B. Mayer stables brought more than half a million dollars at auction. The 3-year-old, Stepfather, was sold to a movie magnate for $200,000 and the 4-year-old filly, Honeymoon, for $135,000. Be Faithful and Coldstream brought the sum for the 4 to $570,000. The prices paid for Stepfather and Honeymoon are world records. None brought less than $9,000.—*From a UP Dispatch, February 27, in the Chicago Sun.*

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Sacramento Valley Association.—The regular meeting of the Sacramento Valley Veterinary Medical Association was held in Sacramento on February 28. Dr. Philip Lee of Sacramento was the moderator in a panel discussion on diseases of small animals, which followed a dinner and the business session. He was assisted in the panel by Drs. M. L. Bovers of Lafayette, T. A. Berry of Berkeley, C. W. Riggs of Yuba City, and R. N. Erickson of Chico.

s/H. M. O'REAR, *Publicity Chairman*.

Colorado

Eighth Annual Short Course.—The Division of Veterinary Medicine, Colorado A. & M. College, sponsored a short course for veterinarians, Feb. 17-19, 1947. After addresses of welcome by the college's president, Roy M. Green, and Dean I. E. Newsom, of the Veterinary Division, the following speakers participated in the program.

Dr. H. W. Johnson, Colorado A. & M. College: "Prolapse of the Vagina" (with motion pictures).

Dr. R. S. Jackson, Colorado A. & M. College: "Laboratory Procedures in the Field."

Dr. Rue Jensen, Colorado A. & M. College: "Development of Telangiectasis, Sawdust, and Abscesses in the Livers of Beef Cattle."

Dr. S. W. Beggs, Lamar: "The Prevention and Treatment of Diseases of Turkeys."

Dr. M. G. Fincher, New York State Veterinary College, Cornell University, Ithaca, N. Y.: "Handling Sterility in Cattle," "The Prevention and Treatment of Mastitis," and "Newer Diseases of Dairy Cattle in the East."

Dr. S. E. Philips, Medford, Ore.: "Diseases of the Eye," and "Canine Surgical Problems."

Dr. Fred T. Foard, U. S. Public Health Service: "The Veterinarian and the Public Health."

Dr. E. L. Nye, Colorado A. & M. College, "Dairy Hygiene," and "Meat Hygiene."

Dr. R. O. Zimdahl, Colorado A. & M. College: "Report on the Use of Buffers in Penicillin Therapy."

Dr. K. J. Peterson, Colorado A. & M. College: "Findings of an Epizoötic Disease in Chinchillas."

Dr. R. C. Klussendorf, assistant executive secretary, AVMA, Chicago, Ill.: "The Prevention and Treatment of Diseases of the Calf."

Dr. Frank Breed, Lincoln, Neb.: "Swine Diseases—Diagnosis of Unusual Field Conditions."

Dr. Floyd Cross, Colorado A. & M. College: "The Rôle of Sulphur in the Control of Enterotoxemia in Lambs."

Dr. R. S. Robinson, radiologist, General Electric Corp., Denver: "Hazards in Radiology."

Prof. H. S. Wilgus, Department of Poultry Husbandry, Colorado A. & M. College: "Poultry Feeding in Relation to Disease."

The banquet speakers were Dr. Florence R. Sabin, chairman, Governor's Post War Planning Committee on Health; and Dr. R. C. Klussendorf who spoke on "Some Activities of the AVMA." Dr. N. J. Miller, of Eaton, was the toastmaster.

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Health Reorganization Bill.—Dr. N. J. Miller, Eaton, was a leader in the fight to secure passage of a bill providing for formation of county and district health units. The bill was sponsored by Dr. Florence R. Sabin, and it passed both houses of the legislature. Drs. Miller and Sabin, attending the banquet held in connection with the annual veterinary conference at Fort Collins, were able to report the progress which virtually assured its enactment. The measure was signed by Gov. W. Lee Knous on Feb. 21, 1947.

C. L. DAVIS, *Secretary*.

Connecticut

Annual Meeting.—The Connecticut Veterinary Medical Association held its annual meeting on February 5 in Hartford. Guest speakers were Dean W. B. Young, of the University of Connecticut, and Representative Harry Farnham.

Dr. R. T. Gilyard presented the association with a handsome gavel in memory of his father, the late Dr. Arthur T. Gilyard, of Waterbury.

The following officers for the coming year were elected: Dr. John W. Knapp, *president;* Drs. J. P. McIntosh and Charles P. Hines, *vice-presidents;* Dr. E. H. Patchen, *secretary-treasurer.* The Board of Censors consists of Drs. G. H. Ludins, W. B. Holcomb, R. S. Stadler, H. C. Raven, and Raymond Larson.

s/E. H. PATCHEN, *Secretary.*

District of Columbia

Association Meeting.—The District of Columbia Veterinary Medical Association held its first meeting of 1947 on February 18. The following speakers participated in the program: Dr. B. T. Simms, chief of the BAI, Washington, and president of the AVMA, who gave "A Brief Discussion of Current Activities of the AVMA;" Dr. H. R. Seibold of the BAI and Dr. Moss Parsons, Virginia practitioner, who presented "Case Histories of Histoplasmosis of Dogs;" and Col. Raymond Randall, Army Veterinary School, Washington, who spoke on "Leptospirosis of Dogs."

Officers elected for 1947 were: Dr. J. R. Currey, Washington, *president*; Dr. Paul C. Underwood, Beltsville, Md., *first vice-president*; Col. James A. McCallam, Washington, *second vice-president*; Dr. Wm. M. Mohler, Washington, *secretary-treasurer.*

s/WM. M. MOHLER, *Secretary.*

Georgia

Meat Industry and Public Health.—The *Valdosta Daily Times* (Feb. 21, 1947) in publishing the annual report of the sanitary department of that city, stresses the rapid growth of its meat industry and the activity of the meat and milk inspection services. The figures on the many types of services performed, in addition to inspections, were compiled by Dr. E. D. King, city inspector, who is a pioneer in the promotion of Georgia's meat and milk inspection, and whose work in these fields has been a credit to his profession.

s/E. M. NIGHBERT, *Cantonment, Fla.*

To those of you who believe that brucellosis cannot be eradicated, I would recommend that you read the full history of cattle-tick eradication in the South.—*Dr. Wm. M. Moore, U. S. Live Stock Sanitary Association, 1946.*

Hawaii

Veterinary Visitors.—Dr. James Farquharson, Fort Collins, Colo., and Dr. Otto Stader, Ardmore, Pa., were welcomed by Dr. L. C. Moss of Honolulu upon their arrival in Hawaii in

Dr. Farquharson, Dr. Moss, and Dr. Stader in Hawaii

January. Dr. Farquharson visited Hawaii at the invitation of the territorial veterinary medical association. He presented many of the films which have been widely shown in the United States and discussed several surgical procedures as they appeared on the screen. They were enthusiastically received.

Dr. Stader spoke to members of a surgical society on the subject of fracture fixation.

Illinois

New Faculty Member.—Dr. Alexander K. Sutherland, of Queensland, Australia, has been appointed as assistant in veterinary pathology and hygiene in the University of Illinois College of Veterinary Medicine. Dr. Sutherland received his bachelor of veterinary science degree in 1937 from the University of Sydney, where he was graduated second in his class, held an "Exhibition" scholarship in veterinary science, and won the Cooper prize for parasitology. Until his appointment to the University of Illinois staff, he was veterinary officer at the Animal Health Station, Yeerongpilly, Queensland.

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Chicago Association.—The Chicago Veterinary Medical Association meeting was held at the Palmer House on February 11. Mr. R. L. Cuff, regional manager of the National Livestock Loss Prevention Board, spoke on "Practical Problems in Grub, Lice, and Fly Control."

Carriage for Paralyzed Dog.—The *Chicago Tribune* (Feb. 8, 1947) describes a carriage made of steel curtain rods, which enables a dog with both hind legs paralyzed to walk on his front legs. Spot, a Spitz owned by H. Ingold of Chicago, was aided, after a fall paralyzed his legs, by Dr. Jack Seligman and Walter Swanson, hospital attendant, both of the Dr. J. R. Skala animal hospital, 4712 North Ave. It is believed that Spot will eventually recover the use of his hind legs.

• • •

Fluorine Research in Evanston.—Sponsored by the U. S. Public Health Service, the local board of health, the State Dental Department, the Zoller Clinic, and the University of Chicago, a longtime research on the relation of fluorine and dental caries was started among the school children of Evanston and westward suburbs where the incidence of caries is said to be three times higher than in adjacent inland territory owing to absence of fluorine in Lake Michigan water. One part per million of fluorine will be added to the water supply, and some 4,400 children from 7 to 14 examined for caries will be reëxamined in two years to estimate the effect.

• • •

Rabies Increasing.—Dr. Edward A. Piszczek, Cook County health director, reported to the *Journal of the American Medical Association* in February that rabies was increasing in Chicago. In the last three weeks of January, 20 cases were reported in Cook County, 10 of them in Chicago—a large number for the winter season, the Doctor added.

• • •

Avian Tuberculosis.—During the year ending June 30, 1946, BAI inspectors tuberculin-tested 301 flocks containing 53,000 of old and young chickens and found 198 flocks (65.7%) had 1 or more tuberculous birds. The over-all percentage of reactors was 5.2. On the other hand, the morbidity rate among 12,000 pullets was but 0.6 per cent. Swine herds on the farms having tuberculous poultry showed a herd morbidity of 33 per cent. The testing of 851 brood sows on these farms showed tuberculosis in 77 (13.2%). In reporting on this campaign against avian tuberculosis, R. H. Smith, general manager of the National Livestock Loss Prevention Board, points out that the loss from tuberculous hogs from carcasses lost or condemned by the federal meat inspection amounted to $2 million last year.

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National Live Stock Loss Prevention Board Meets.—The twelfth annual meeting was held at the Palmer House, Chicago, Feb. 11, 1947, Dr. W. A. Young, chairman, presiding. The report of the treasurer, C. H. McNie, showed total contributions for 1946 of $16,775 and a balance of $9,441.20.

Reports were made by the regional managers, Harry J. Boyts, Sioux City, Iowa; W. A. Peck, South St. Paul, Minn.; Ray L. Cuff, Kansas City, Mo.; and Dr. W. T. Spencer, Lincoln, Neb.; and by the general manager, H. R. Smith of Chicago. The reports included special discussions on sheep parasites, grubs, flies and lice, and railway transportation losses. Other featured speakers included:

Robert F. Sellar, president, American Humane Association, Albany, N. Y.: "The Importance of the Economic Application to Animal Humane Work."

Harold Henneman, Agricultural Relations Division, Wilson & Co., Chicago: "Bruise Losses in Pork."

Dr. J. A. Barger, Des Moines, Iowa, AVMA representative on the Board, discussed loss prevention work from the standpoint of reducing poultry and swine tuberculosis, and the "back-tracking" of tuberculous animals coming to federally inspected abattoirs.

At the business session, the present officers were reëlected: *chairman*, Dr. W. A. Young, Chicago; *vice-chairman*, Dr. W. J. Embree, Columbus, Ohio; *secretary*, Dr. H. Preston Hoskins, Evanston, Ill.; and *treasurer*, Mr. C. H. McNie, Chicago. s/J. A. BARGER.

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Five-Million-Dollar Campaign Launched.—The American Dairy Association, meeting in Chicago on March 3 and 4, adopted a program to maintain or increase dairy sales. The platform calls for a combination of salesmanship and showmanship and will involve the expenditure of $5 million during the next three years.

Indiana

Personal.—Mr. James L. Rogers, sales manager of the Pitman-Moore Co., Indianapolis, since 1935, has acquired a substantial interest in Central Pharmacal Company, Seymour, and will become president of that company.

Iowa

Encephalomyelitis in 1946.—The sum of equine encephalomyelitis cases in the state in 1946 was 178. One case appeared in March and 5 cases as late as November; 30 cases occurred in July, 17 in August, and 59 in September; Keokuk County had 15, Jackson County 14, Ringgold County 10; the rest were scattered among 48 counties. Total deaths 45, none of which occurred ten days or more after vaccination.—*Condensed from a report by C. C. Franks and J. A. Barger.*

Kansas

Conference of Veterinarians.—The School of Veterinary Medicine, Kansas State College, sponsored a conference of graduate veterinarians on animal breeding problems, at Manhattan, April 3-5, 1947. The teaching staff and assistants covered the field of reproduction through lectures and demonstrations on such subjects as anatomy of the reproductive tracts, sex physiology and endocrinology, pregnancy diagnosis, artificial insemination, trichomoniasis, and cystic ovaries in horses.

Since accommodations for those attending are limited, the conference will be repeated at later dates if necessary.

Manitoba

Annual Meeting.—The Veterinary Association of Manitoba met at Winnipeg for its fifty-

seventh annual meeting on February 21. At the morning business session, Dr. W. Hilton was elected *president*; Dr. A. Savage, *vice-president;* and Dr. J. M. Isa, *secretary-treasurer.*

Speakers at the afternoon session and their subjects were as follows:

Dr. C. A. Mitchell, Dominion animal pathologist, Hull, Que.: "Viruses and Some of the Diseases They Cause."

R. H. Painter, Dominion Entomological Laboratory, Lethbridge, Alberta: "Control of Insects Affecting Livestock."

Dr. E. C. Chamberlayne, Manitoba Department of Public Health, Winnipeg: "Communicable Diseases Affecting Man That Are of Interest to the Veterinarian."

Following the evening banquet, Dr. W. L. Boyd, University of Minnesota, St. Paul, gave an illustrated lecture on "Newcastle Disease of Poultry" and "Sterility of Farm Animals." He also spoke on the brucellosis problem.

s/J. M. ISA, *Secretary.*

Massachusetts

February Meeting.—The Massachusetts Veterinary Association held its monthly meeting on February 26 in Boston. The featured speakers on the dinner program were Dr. Fritz Nilsson, assistant professor of surgery, Royal Veterinary College, Stockholm, Sweden, who spoke on "Injuries to the Semilunar Cartilage in the Log"; and Dr. David L. Coffin, pathologist at the Angell Memorial Hospital, Boston, whose subject was "Interpretation of Laboratory Findings."

Michigan

Western Association.—The Western Michigan Veterinary Medical Association met at the Colony Restaurant in Grand Rapids on February 20. The speaker of the evening was Mr. Stephen Partington, superintendent of the Wyoming School, who discussed the implications of World War II and the necessity of straight thinking by the American people in the future. A general discussion of veterinary affairs followed.

Forty-six veterinarians and their wives were present.

s/FRANK THORP, JR.

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Junior Association.—Dr. E. C. W. Schubel addressed the members of the Junior AVMA, Michigan State College, East Lansing, at the February 13 meeting. He spoke on "Ethics in Veterinary Practice."

Minnesota

Fiftieth Anniversary.—The Minnesota State Veterinary Medical Society celebrated its fiftieth anniversary on Jan. 6-8, 1947, in St. Paul. The meetings were conducted by President Carl Hansen of Faribault. The attendance was the largest in the history of the Society and the meeting was considered to have been one of its finest. Twenty-seven new members were added to the roll.

Dr. B. T. Simms, chief of the U. S. BAI and president of the AVMA, addressed the assembly in both its technical and social sessions. The Honorable Luther W. Youngdahl, Governor of Minnesota, spoke at this session indicating his sincere appreciation of the function of the practicing veterinarians and veterinary research to the livestock industry of this commonwealth. Dr. L. A. Buie, professor of proctology, Mayo Foundation, and president of the Minnesota Medical Association, also spoke at this session. The speaker showed how the cooperative efforts of the medical and veterinary professions can bring the greatest good to mankind from the standpoint of freedom from diseases, disorders, and disturbances which are communicable one to the other. An historical account of the organizing meeting of this Society and of some of the national, state, and local events occurring at that time was reported by Dr. H. C. H. Kernkamp.

"Cattle Practice" was the title of a paper by Dr. J. C. Carey of West Liberty, Iowa; "Mixed Practice," by Dr. W. C. Glenney of Elgin, Ill.; "Swine Disease," by Dr. J. D. Ray, Omaha, Neb.; "Medical and Surgical Diseases of Small Animals," by Dr. D. W. Smith, Iowa State College, Ames; and "Virus Diseases of Poultry," by Dr. C. A. Brandly, University of Wisconsin, Madison, were presented as part of the technical program. Dr. W. L. Boyd, assisted by these speakers, conducted a profitable panel discussion on problems of everyday interest to the practicing veterinarian.

Dr. R. A. Merrill, chairman of a special committee to report upon the needs of a college of veterinary medicine in the University of Minnesota, submitted an interesting report, which provoked a lively discussion and was received by an overwhelming majority vote. A resolution was adopted and sent to the president of the University, the regents of the University, and each of the legislators, in which it was declared that the Minnesota State Veterinary Medical Society favored the establishment of a veterinary college at the University and that such college should meet the requirements of the AVMA Council on Education for an acceptable school. Many other interesting and instructive committee reports were received.

H. C. H. KERNKAMP, *Secretary.*

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Personal.—Dr. Seth S. Osborn was reëlected president of the Minnesota Fur Breeders Association at the twenty-sixth annual meeting of that association held in Minneapolis in December.

Missouri

Kansas City Monthly Meeting.—The February 18 meeting of the Kansas City Veterinary Medical Association comprised a lecture on cattle diseases by Dr. George R. Moore, of the Kansas State Faculty, a technicolor and sound film by the Ralston-Purina Company, and a general discussion of large animal practice. At the March meeting, Dr. S. W. Haigler, of St. Louis, will speak on canine therapeutics and present the U. S. BAI film on brucellosis.

s/GAIL B. SMITH, *Secretary.*

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Officers.—The officers of the Kansas City Veterinary Medical Association for 1947 are: Dr. D. O. Wendt, Bonner Springs, Kan., *presi-*

dent; Dr. Robert L. Anderes, Kansas City, Mo., *vice-president;* and Dr. Gail B. Smith, *secretary-treasurer.*

s/GAIL B. SMITH, *Secretary.*

Nebraska

Representatives to AVMA House.—Dr. L. I. Hines, of Spencer, is the representative to the AVMA House of Representatives, and Dr. M. L. Cline, Plainview, is the alternate.

At the annual meeting of the state association in December, 1946, the association passed a motion to issue paid-up life memberships to all members 70 years old or older. The following veterinarians have been so honored: Dr. John A. Berg, Pender; Dr. Mason B. Cogswell, Waverly; Dr. John L. Holyman, Loup City; Dr. Theodore H. Knaak, Coleridge; Dr. Andrew J. Kyle, Bayard; Dr. George G. Lemley, Omaha; Dr. John L. Meixel, Scottsbluff; Dr. Andrew Nelson, Omaha; Dr. Ernest G. Newton, Stamford; and Dr. J. C. Myers, Tilden.

Nevada

Surplus Potatoes for Stock Feed.—Several thousand tons of surplus potatoes grown in Lynn County have been sold for livestock feed. The potatoes were covered by federal, price-support loans and were surrendered by the growers to the Production and Marketing Administration, the low grade and deteriorating ones going for stock feed and the rest to the general market. The support price was $2.25 per hundredweight, f.o.b. in bags. Where that price could not be obtained, the government made up the deficit. The PMA was authorized to sell the low grades at 20 cents per hundredweight.

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Cattle Pest (Grub) Control.—Four counties were set apart for a vigorous campaign in February against cattle pests under the direction of Dr. W. W. Laake, research entomologist of the U. S. Bureau of Entomology, and Dr. Edward Records, Department of Veterinary Science, University of Nevada, with the State Department of Agriculture and prominent stockmen participating. The project, which was inaugurated by the University of Nevada Agricultural Extension Service, included demonstrations against sheep ticks.

New Jersey

Rogue's Gallery for Dogs.—The township of Teaneck, as a part of the rabies control program, has a Rogue's Gallery for rabid dogs, organized by Dr. B. S. Bookstaver, director of health, and Chief of Police C. J. Harte. In this way, all dogs sent to the diagnostic laboratory for examination for presence of the disease will be photographed. Dogs which had roamed over a number of towns could be identified in this manner.

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New Regulations.—Two new regulations in the State Sanitary Code, chapter 3, were enacted Jan. 14, 1947, regarding movement of animals in the state. Any dog brought into the state must be accompanied by a health certificate issued by a licensed veterinarian in the state of its origin; the dog must be free from rabies or any other communicable disease. The second regulation provides that no animal confined by quarantine in any area where the presence of rabies has been discovered shall be moved to an area not under quarantine unless accompanied by the health certificate, and the post office addresses of consignee and consignor.

New York

New York City Association.—The March 5 meeting of the New York City Veterinary Medical Association featured a "Symposium on Veterinary Orthopedics" (illustrated). The speakers were Dr. Erwin F. Schroeder, chief of staff at the Angell Memorial Animal Hospital, Boston, Mass.; and Dr. Ellis P. Leonard, of Summit, N. J. Following this, a motion picture, "The Use of the Stader Splint in Treating Fractures in Small Animals," was shown.

s/C. R. SCHROEDER, *Secretary.*

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Veterinary Conference.—Newcastle disease of poultry and its control was stressed at the thirty-ninth annual conference of veterinarians at Cornell, Jan. 2-4, 1947. A panel discussed a new mastitis control program. Other topics included turkey diseases, livestock foods, hemophilia in a family of dogs, and the practice of vivisection. Drs. Earl Sunderville and Howard Milks, both of whom are retiring, were honored at dinner. The memorial fund was increased by $5,000.

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The Family Goat Popular.—The popularity of dairy goats is steadily increasing among families in New York State. The increased use of goats improve the nutrition of such families, according to J. K. Loomis of Cornell University's animal-nutrition laboratory. A goat will produce enough milk for a family of three or four.—*From Successful Farming.*

North Dakota

Northeast Farm Managers Association.—Dr. J. D. Ray, pathologist of the Corn States Serum Company, Omaha, reviewed the "Discoveries of 1946 on How to Keep Livestock Healthy" before the thirty-eighth annual meeting of the Northwest Farm Managers Association at Fargo, February 25-27. On the day given over to livestock, Dr. Ray brought in a message showing that veterinary medicine keeps abreast of scientific knowledge for the advantage of the livestock farmers.

Ontario

Annual Meeting.—The seventy-third annual meeting of the Ontario Veterinary Association was held in Ottawa, Jan. 31 to Feb. 1, 1947. In addition to the business meeting, the first day's program included the following speakers:

Dr. A. R. Campbell, Guelph: "President's Message."

Dr. J. M. Veilleux, Health of Animals Service, Department of Agriculture, Quebec: "The

Veterinary Profession in the Province of Quebec."

Dr. C. A. Mitchell, Dominion animal pathologist, Hull, Que.: "The Veterinary Profession in the British Isles."

Dr. W. A. Hagan, dean, New York State Veterinary College, Ithaca: "X-2 Disease in Cattle."

Dr. F. W. Schofield, Ontario Veterinary College, Guelph: "Acute Pulmonary Emphysema in Cattle."

Dr. C. A. V. Barker, Guelph: "Artificial Insemination."

Dr. C. S. Bryan, Michigan State College, East Lansing: "Some Problems in Large Animal Practice."

The banquet speaker was Prof. E. G. D. Murray, head of the Department of Bacteriology, McGill University, who spoke on the need for giving science its just influence in the preservation of world peace.

The officers for the coming year are: Dr. E. F. Johnston, Carp, *president;* Dr. D. J. McLellan, Toronto, *first vice-president;* and Dr. H. Worton, Peterborough, *second vice-president.*

s/W. MOYNIHAN, *Secretary.*

Pennsylvania

Alvarenga Prize Lecture VI.—The veterinary profession was honored by the College of Physicians of Philadelphia when Dr. William Feldman, director of experimental medicine, Mayo Foundation, Rochester, Minn., was awarded the prize for the Alvarenga Prize Lecture at a joint meeting of the College and the Philadelphia County Medical Association, last October. The title of the lecture is "Studies in Chemotherapy of Tuberculosis Including the Use of Streptomycin."

Texas

Personal.—Drs. M. E. Maier and M. E. Maier, Jr., held open house on February 2 in their new animal hospital, located at Orange, on old highway 90 west of the city.

Vermont

Annual Meeting.—On February 14, the Vermont Veterinary Medical Association held its annual meeting at the University of Vermont, Burlington, with an attendance of 33 veterinarians.

Featured speakers on the program were: Dr. Donald Baker, parasitologist at the New York State Veterinary College, Ithaca, who spoke on "Skin Diseases and Their Control;" and Dr. T. T. Chaddock, of Grafton, Wis., who discussed "Distemperoid Vaccine in Dogs" and "Diseases of Fur-Bearing Animals." At the banquet on the campus, Dr. A. G. Mackay, professor of surgery at the Medical School of the university, spoke on "Endoscopy in Human Medicine."

The officers elected for the coming year are: Dr. L. A. Evans, Essex Junction, *president;* Dr. A. W. Wright, Vergennes, *first vice-president;* Dr. A. F. Ranney, Montpelier, *second vice-president;* and Dr. E. F. Waller, Burlington, *secretary-treasurer.*

s/E. F. WALLER, *Secretary.*

Washington

Personal.—Two veterinarians, Drs. E. E. Wegner of Pullman and G. R. Hartsough of New Holstein, Wis., are members of the National Board of Fur Farm Organizations.

Wisconsin

Officers for 1947.—The officers for the Wisconsin Veterinary Medical Association elected at the annual meeting at Madison on January 15-17 are as follows: Dr. Charles Hammerberg, New London, *president;* Dr. S. K. Andreassen, Menomonie, *vice-president;* Dr. W. L. Richards, Morrisonville, *treasurer;* and Dr. B. A. Beach, Madison, *secretary.*

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Personals.—Dr. Keith W. Downey (KSC '42) has opened a practice at Seymour, and Dr. Carl Schubert (ISC '37) has entered practice at Hartford. Dr. Schubert has been a staff member of the state Department of Livestock Sanitation since his graduation, with the exception of four years spent with the armed forces in World War II.

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Retirement of Veterinary Educator.—Dr. F. B. Hadley, professor of agricultural administration at the University of Wisconsin, Madison, will retire on June 30, 1947. Dr. Hadley was graduated from The Ohio State University in veterinary medicine in 1907. Following two years as professor of veterinary anatomy and surgery at Washington State College, Pullman, Wash., he became the associate of anatomist Dr. Septimus Sisson at The Ohio State University. In 1910, he was appointed to the staff of the Veterinary Science Department at the University of Wisconsin, in which capacity he served until two years ago, when he accepted his present professorship.

Wyoming

Laboratory Bill.—A bill appropriating $75,000 for the establishment of a veterinary laboratory at the University of Wyoming at Laramie was introduced in the Wyoming legislature on January 17. The bill is sponsored by the Wyoming Stockgrowers and Woolgrowers, farm bureau associations, and the state Livestock Sanitary Board.

s/A. M. LEE, *University of Wyoming.*

FOREIGN

England

Horses of England.—The horse census of England and Wales as of June 4, 1946, showed 647,200 head, which is 3,300 fewer than on the same date of 1945. The farm horses numbered 437,000, or 20,000 below the 1945 figure. All types and ages of horses showed a decline.

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A Case of Rabies.—The *Veterinary Record* (Dec. 21, 1946) reports a case of rabies that developed on November 25, in an imported dog during the prescribed six-month period of quarantine. The dog was a 13-month-old Alsa-

tian brought from Milan, Italy, on October 31. The period of incubation dated from the latter part of September. The diagnosis was confirmed.

Ethiopia

The First Health Movement.—Although this is one of the oldest populations in the world, it has never had an indigenous health department until UNRRA recently took steps to create a medical and nursing profession by training sanitary inspectors and "dressers."—*Am. J. Pub. Health, January, 1947.*

France

Livability of Horse Racing.—Whatever qualms are nursed about horse racing, its popularity has a remarkable livability and recovery quotient. Take France where the breeding of Thoroughbreds was cruelly harassed by the war; the sport was quickly restored to as near its former level as could be expected and is now beginning to surpass the status of prewar years. "So far as Thoroughbreds and farm horses are concerned," writes a Paris correspondent, "the horse is not passing from the scene as much as it might be supposed."

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International Veterinary Society Revived.—The first postwar meeting of the *Office International des Epizoöties* was held, under the leadership of its founder, Prof. E. Leclainche, and the urge of the UNRRA. The Office has functioned for Europe much in the same fashion as the U. S. Livestock Sanitary Association, in the matter of instituting uniform disease-control measures in all countries. The yeoman service rendered by the international organization between the two wars is recalled for its helpful influence in the continental countries.

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On the Improvement of Market Milk.—The numerous articles in veterinary, medical, and agricultural periodicals dealing with the methods of handling fluid market milk indicate the difficulty of instituting reforms in the face of a general desire to do so. "America," writes a correspondent, "is fortunate in not being stalled by established customs that are not easy to reform." He blames the farmers for blocking regulations on refrigeration, bottling, pasteurization, gradation, and the tell-tale bacterial count, plus lack of interest among the consuming public.

Germany

Veterinary Status, U. S. Zone.—Shortages, from approved personnel to electric power, have seriously hampered the rehabilitation of the public veterinary service in the U. S.-occupied zone of Germany. Notwithstanding the drawbacks, it is apparent that Colonel Frank Todd, V.C., and his staff assigned to the military government have made good progress.

In an official report issued by U. S. Army headquarters in Germany, the shortage of qualified veterinary personnel is cited as acute. Denazification activities, wartime deaths, and lack of replacement training during the war are given as the principal reasons. A large number of the Kreis (county) veterinary officials are inexperienced, mainly because the low salaries offered have not attracted capable men. Although there are not enough trained meat inspectors and abattoir supervisors, this problem is being overcome by training courses conducted for veterinary meat inspectors throughout the U. S. Zone.

The supply of certain veterinary medicines and instruments is inadequate. Public laboratories, struggling along on too little of everything, are housed in war-damaged buildings. They are, however, managing to make all essential examinations. Established veterinary colleges, denazified, have been reopened, but lack of fuel and equipment are serious obstacles to their operation.

Equine scabies, swine erysipelas, and bovine tuberculosis are widespread in the U. S. Zone, but many other diseases are held under control through the use of serums and vaccines, mostly produced under Veterinary Corps supervision. There is no shortage of private practitioners in this zone.

India

Diseases in Army Animals.—A recent report (1946 Report of the V.C., Indian Army) from India reveals the wartime losses among the food-producing and transport animals of India's armed forces.

Surra, the most serious veterinary problem throughout the Burma campaign, affected 17 per cent of the total horses and mules in 1942, mainly because the army had insufficient trained veterinary personnel and laboratory equipment to fight the disease. As manpower and materials became available, the incidence of surra was reduced sharply.

Rinderpest was another problem, with outbreaks reported frequently among food-producing animals. During one year, 3,567 slaughter animals developed this disease in various outbreaks, of which 2,356 (66%) died.

Contagious pleuropneumonia was troublesome when sheep and goats were exported to forward areas. In 1944-1945, 18,714 cases were treated, of which 15,511 (83%) died.

Losses of chicks due to coccidiosis also were high. Losses from anthrax were extensive. Foot-and-mouth disease was fairly widespread, but the mortality was low.

Of 283 buffalo calves born on military farms, 53 per cent died within seven days of birth, and only 28 per cent survived for more than fourteen days. Scours of Salmonella origin caused death in most cases. Vaccination was valueless against scours, although preliminary tests with hyperimmune serum were promising. Nicotinic acid and vitamins A and D were likewise ineffective, but vitamin A prevented the conjunctivitis frequently associated with this disease.

Beginning in 1944, the veterinary service assumed responsibility for the inspection of all fresh meat used by India's armed forces.

Indochina

Dainty Milk Drinkers.—In a thesis for the veterinary doctorate, G. Guy *(Thesis*, Paris, 1945) points at length to the small amount of milk produced in that oriental country, especially in the lower altitudes where plant life and parasites and lack of transport from the higher altitudes are not favorable to milk production. Moreover, the natives are suspicious of milk and dainty about drinking it, notwithstanding its much needed antianemic properties. The low consumption of milk by the natives is a social question of the first rank which only occidental directives can improve. Between the lines is a lesson on the effect of food on human welfare as occidental people like it.

Italy

Harness Horses Superseding Thoroughbreds.—The importation of excellent types of Standardbred American horses is reducing the popularity of the less useful Thoroughbred both for general utility and racing. The popularity of trotters and pacers has soared, not that they are something new but because they can be put to many uses besides sport. Harness race horses were introduced about fifty years ago, but they were always subordinate to the riding horse until the end of the war. As a matter of fact, were it not for the help of the harness horse group, Thoroughbred racing would wither.

New Zealand

Racehorse Clinic Proposed.—Plans are under consideration for the establishment of equine clinics in districts of New Zealand where large numbers of racehorses are in training. The Racing Conference, composed of the various racing clubs, would possibly establish the first clinic in conjunction with the Massey Agricultural College, University of New Zealand, Palmerston North.

s/G. S. PEREN,
Principal, Massey Agricultural College.

Russia

Shortage of Horses.—Russia and Poland are short 7,000,000 draft horses lost in the war according to a report of UNRRA. The shortage is being made up in part by importations from Sweden, Denmark, Norway, and Finland. Because of having yielded territory to Russia, Finland has a surplus of horses which is being traded for forage to feed her remaining 400,000 head.

COMING MEETINGS

American Animal Hospital Association. Tulsa, Okla., April 22-24, 1947. R. E. Ruggles, 901 19th St., Moline, Ill., secretary.

North Central Iowa Veterinary Medical Association. Wahkonsa Hotel, Fort Dodge, Iowa, April 24, 1947. B. J. Gray, Box 797, Fort Dodge, Iowa, secretary-treasurer.

American Society for the Study of Sterility. Hotel Strand, Atlantic City, N. J., June 7-8, 1947. John O. Haman, M.D., 490 Post St., San Rafael, Calif., secretary.

Ohio State University. Annual Conference for Veterinarians. College of Veterinary Medicine, Ohio State University, Columbus, June 11-12-13, 1947. Walter R. Krill, College of Veterinary Medicine, dean.

California State Veterinary Medical Association. San Diego, Calif., June 23-25, 1947. Floyd H. White, Grand Ave. at Third St., San Rafael, Calif., secretary.

North Carolina State Veterinary Medical Association in conjunction with the South Carolina Association of Veterinarians. Hotel Charlotte, Charlotte, N. Car., June 25-26, 1947. J. H. Brown, Tarboro, N. Car., secretary-treasurer.

American Veterinary Medical Association. Eighty-fourth Annual Session, Netherland Plaza Hotel, Cincinnati, Ohio, Aug. 18-22, 1947. J. G. Hardenbergh, American Veterinary Medical Association, 600 S. Michigan Ave., Chicago 5, Ill., executive-secretary.

Eastern Iowa Veterinary Association, Inc. Hotel Montrose, Cedar Rapids, Iowa, Oct. 14-15, 1947. Laurence P. Scott, P. O. Box 325, Waterloo, Iowa, secretary.

Chicago Veterinary Medical Association. Palmer House, Chicago, Ill., the second Tuesday of each month. Robert C. Glover, 1021 Davis St., Evanston, Ill., secretary.

Massachusetts Veterinary Association. Hotel Statler, Boston, Mass., the fourth Wednesday of each month. E. A. Woelffer, c/o A. P. Hood & Sons, Boston, Mass., secretary-treasurer.

New York City Veterinary Medical Association. Hotel Pennsylvania, New York, N. Y., the first Wednesday of each month. C. R. Schroeder, Lederle Laboratories, Inc., Pearl River, N. Y., secretary.

Saint Louis District Meetings, Roosevelt Hotel, St. Louis, Mo., the first Friday of each month. C. W. Darby, Dept. of Animal Pathology, Ralston-Purina Co., St. Louis 2. Mo., secretary.

Houston Veterinary Medical Association. Houston, Tex., the first Thursday of each month. Edward Lepon, Houston, Texas, secretary-treasurer.

STATE BOARD EXAMINATIONS

Massachusetts—The Massachusetts Board of Registration in Veterinary Medicine will hold examinations for registration in this state on June 12-14, 1947, at Amherst, Mass. The latest date for filing applications is May 29, 1947. Address inquiries to Dr. B. S. Killian, secretary, Board of Registration in Veterinary Medicine, Room 413-N, State House, Boston 33, Mass.

VETERINARY MILITARY SERVICE

Awards and Citations

Major John G. Cranfield, V. C., received the following citation for the Bronze Star medal for meritorious achievement in connection with military operations in the Hawaiian Islands and Okinawa from May 30, 1942, to Aug. 1, 1945: "As war dogs veterinarian for the Hawaiian Department, Major Cranfield displayed outstanding professional knowledge and skill in initiating and executing policies relative to the selection, care, and training of war dogs . . . he performed invaluable services in Oahu as commanding officer of the Veterinary General Hospital and of the 113th Medical Service Company, competently training personnel and directing a comprehensive food security program. He subsequently served with marked distinction as assistant island command veterinarian during the assault on Okinawa despite the most difficult combat conditions."

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Lieutenant Colonel Maurice W. Hale, V. C., received the Legion of Merit award for the performance of outstanding services from April, 1944, to January, 1946.

Upon release from duty with the joint U. S.—Canadian commission in Canada, Lt. Col. Hale was assigned to the Veterinary Research Laboratory at Fort Robinson, Neb. Recently, he was assigned to the U. S. Military Ground Mission, Lima, Peru, to replace Lt. Col. Russell McNellis, who returns to this country in March.

Veterinary Officers Separated from Military Service

Alabama
Harrell, Wilson H.
Marsh, Ralph W.

Arizona
Smith, Augustus M.

California
Foster, Stuart M.
Laskey,, Herbert H.
Taylor, Clarence E.

Colorado
McGrath, Harold B.
Smith, Luther C.

Florida
Cunningham, W. W.

Georgia
Adams, Carroll P.
Bush, Thomas C. Jr.

Illinois
Cobble, John R.
Lichty, Dwight Lee

Kansas
Hourigan, James L.
Lamont, Jack D.

Kentucky
Winkler, Jack E.

Maryland
Fitts, Robert H.

Massachusetts
Bentinck-Smith, J.

Michigan
Stuewer, George H.
Sullivan, David J.

Missouri
Stoenner, H. G.

New York
Armstrong, James
Clement, Edwin P.
Morse, Erskine V.

Ohio
Elliott, Herbert B.
Greenlee, Allan M.

Pennsylvania
Barnes, Lloyd D.
Patterson, A. W. Jr.

Texas
Whitman, J. P. Jr.

Washington
Dodge, John R.

BIRTHS

To Dr. (ONT '38) and Mrs. J. M. Woodcock, Belle Mead, N. J., a daughter, Jane Reid, Nov. 9, 1946.

To Dr. (WASH '44) and Mrs. Art Zimmerman, 1007 Elm St., Albany, Ore., a daughter, Ellen Jean, Jan. 13, 1947.

To Dr. (API '43) and Mrs. W. L. Lindsey, P. O. Box 203, Abingdon, Va., a son, Walter Lee, Jr., Jan. 23, 1947.

To Dr. (COLO '39) and Mrs. V. J. Humphreys, Box 715, Worland, Wyo., a son, Feb. 12, 1947.

To Dr. (COLO '44) and Mrs. C. Clinton Shoffner, 3025 3rd St., Boulder, Colo., a son, Dean Alan, Feb. 19, 1947.

To Dr. (COLO '40) and Mrs. L. R. Metzger, 3930 Broadway, Boulder, Colo., a son, Lawrence Knute, March 5, 1947.

DEATHS

★**John W. Casey** (CORN '13), 56, Rouse's Point, N. Y., died Jan. 30, 1947. Dr. Casey had been with the U.S. BAI, and had served as a veterinarian in World War I. He was admitted to the AVMA in 1929.

John W. Cook, 86, Portland, Ore., died Feb. 19, 1947, after a two-month illness. A native of Ontario, Canada, Dr. Cook came to Oregon in 1911 after practicing in Indiana and Duluth, Minn. He practiced in Brownsville until 1924 and, until his retirement in 1940, raised registered sheep on a ranch near Sutherlin. He was one of the oldest veterinarians on the Pacific coast.

★**William H. Dodge** (AMER '92), 81, Leominster, Mass., died Jan. 11, 1947. Dr. Dodge was on the Honor Roll of the AVMA, having been admitted in 1892.

★**Paul S. Hannah** (COLO '31), 42, Blackfoot, Idaho, died Nov. 19, 1946. Dr. Hannah was admitted to the AVMA in 1937.

★**John Keppel** (MCK '02), 75, Zeeland, Mich., died Feb. 22, 1947. Dr. Keppel was admitted to the AVMA in 1929.

★**G. F. O'Malley** (OSU '23), 49, Clinton, Mass., died Feb. 9, 1947. Dr. O'Malley became a member of the AVMA in 1929.

★**J. H. Spence** (ONT '90), 80, Clinton, Iowa, died Feb. 21, 1947, following an operation. Dr. Spence had been actively engaged in practice in Clinton since 1891. He had been a member of the AVMA since 1924.

★**Ellery Wrinkle** (SAN FRAN '10), 61, Oakdale, Calif., died Jan. 28, 1947, following a stroke. Dr. Wrinkle had practiced in Oakdale from 1910 until the time of his death. He was admitted to the AVMA in 1928.

★Indicates member of the AVMA.

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